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Journal of Educational Research

Registered June 4, 1929

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THE JOURNAL OF EDUCATIONAL RESEARCH is indexed in the Education Index

Edited and published by A. S. Barr, Professor of Education, University of Wisconsin, Madison, Wisconsin

Entered as second-class matter at the post office at Madison, Wisconsin under the act of March 3, 1879

JOURNAL OF EDUCATIONAL RESEARCH

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The JOURNAL OF EDUCATIONAL RESEARCH is edited and published at Madison, Wisconsin, monthly except June, July, and August by A. S. Barr. The subscription price is $3.50; $4.00 in Canada and in other foreign countries. Single copies 50¢.

Address all communications to A. S. Barr, Department of Education, University of Wisconsin, Madison, Wisconsin.

Democrat Printing Company, Madison, Wisconsin

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JOURNAL *of* EDUCATIONAL RESEARCH

Volume XXXV FEBRUARY, 1942 Number 6

SUMMARY OF READING INVESTIGATIONS JULY 1, 1940 TO JUNE 30, 1941

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Editor's note: One of the areas to which research workers can point with considerable pride is the field of reading. The author presents his annual summary of research in this field.

THIS article presents a brief summary of investigations relating to reading published between July 1, 1940 and June 30, 1941. It continues the series that has appeared in the *Journal of Educational Research* since 1933. The discussion that follows aims chiefly to acquaint the reader with the various types of studies published during the year and with the more significant findings. A study of the content of this article should be followed by a critical reading of the various references which are of special interest to the reader.

Three summaries of reading investigations appeared during the year. A briefer one, comparable to this article, was prepared by Gray (47) and covered the period from July 1, 1939 to June 30, 1940. A much more comprehensive one was prepared by Traxler (105) covering the period from January 1, 1930 to January 1, 1940. It included 618 annotated references relating to studies of reading in elementary and secondary schools and in colleges. One of the significant conclusions reached by the author is that "research in reading has been extended from the laboratory into the classroom." Even more important in his judgment, is the fact "that schools and colleges are rapidly adopting a realistic view of the reading situation and that teachers beyond the elementary school are not only accepting responsibility for helping their pupils improve in reading skill but are also trying out a wide variety of procedures and courageously appraising the results." A third summary by Gray (46) described the progress of research in read-

ing during the last century and pointed out significant contributions to the sociology, physiology, psychology, and pedagogy of reading.

The remainder of this article presents important results of the year's research in reading under the following major headings: the social uses and effects of reading; reading interests; reading achievement and factors influencing it; studies of reading material; the teaching of reading; problems relating to reading disability; comparisons and interrelationships of psychological factors; and the hygiene of reading.

SOCIAL USES AND EFFECTS OF READING

Because of the wide significance of reading in social life an increasing number of studies have been made during recent years concerning the status of reading among adults and its social uses and effects. Five such studies were reported during the year.

What reading does to people.—Of wide significance are the findings of Waples (107) who reviewed extensively the technical literature of the field in order to determine the effects of reading among adults. Five types were identified: (1) the "instrumental effect" that is "fuller knowledge of a practical problem and greater competence to deal with it"; (2) "prestige effect," that is "relief of inferiority feeling by reading what increases self approval"; (3) "reenforcement effect," that is "reenforcement of an attitude or conversion to another attitude toward controversial issues"; (4) "esthetic effect," that is securing "esthetic experience from specimens of literary art"; (5) "respite effect," that is "finding relief from tensions by reading whatever offers pleasant distraction." The evidence reviewed by Waples showed that many types of reading material contribute to each of these effects and that systems of distribution have developed for providing the various types of material to those who demand it. A further step in understanding and describing the group effects of reading "will be to identify the relevant content in each type of publication by making appropriate analyses." In Waples' judgment, "the extension of popular education, the improvement of communication methods, and the rapid increase in the scope of public communications are certain to increase the importance of symbolic experience" (reading).

The radio and the printed page.—Some writers question the validity of the foregoing conclusion on the assumption that the radio in the future will serve needs that have usually been provided through reading. The re-

sults of a recent study by Lazarsfeld (59) do not support this assumption. He attempted first to determine "whether today's *serious* broadcasts really reach strata of the population which have not, so far, been reached by print." Although the radio does disseminate information to large masses of the people the conclusion to the foregoing question was largely negative. If "an individual for one reason or another has no contact with print, he is not likely to develop and preserve enough general interest to have any use for serious broadcasts." Whether the situation will change in the future is recognized as an unsolved problem. At least radio accepts it as a challenge.

The results of a study of preferences at different cultural levels for radio and print strongly supported the assumption that the higher the cultural level the more likely people would be to read rather than listen. In the case of efficient readers, reading is more economical in terms of time. Furthermore, the reader can establish his own rhythms and speed. It is also a more flexible method of obtaining information since the reader can choose the portions to which he wishes to devote attention. Lazarsfeld concluded that "the efforts of all the movements which try to improve people's reading habits remain justified and unimpared by radio's progress."

Family expenditures for reading and other items.—One measure of the importance attached to print by the American people is the amount they are willing to spend for it. Illuminating information in this connection was secured by the United States Department of Labor (35) which compared the expenditures for six different items of native-born American families in 32 different cities for a twelve months period during 1935–36. The six items studied were recreation, reading, formal education, tobacco, contributions, and personal taxes. The data collected showed, first, that increases in expenditures for each of these items paralleled general increases in income, second, that the relative importance of the items varied somewhat at different income levels, and third, that practices vary in different cities, in different sections of the country, and in different families. However, the following order prevails generally among families above the $1250 income level: contributions, recreation, personal taxes, education, tobacco, reading. The actual amount spent for reading material varies from about $10.00 per year for families at the $500 income level to $40.00 or more for families at the $6000 income level. Beyond the $7500 income level, the proportion of total income spent for reading tends to decline. With respect to the type

of reading material secured the study showed that "American families, rich or poor, insist upon the daily newspaper. The reading of magazines, while obviously common, leads to no such family outlays on the average as does the daily newspaper. The purchase of books, on the other hand, involves much smaller outlays, even at higher income levels."

Amount and character of weekly newspaper reading.—The actual use made of reading material is even more important than the amount spent for it. In an effort to determine what weekly newspaper readers read Finley (39) interviewed 100 readers of each of five weekly newspapers within five days after the distribution of the papers. "An unmarked copy was placed before the reader and he was asked for an honest report on what he had read, and nothing more. The whole content of the newspaper was marked accordingly." The study is significant because of the unique procedure followed in securing information. The responses of the readers showed that the front page received most consideration by both men and women. Specific features which attracted wide attention varied with the papers. The average number of readers per paper was approximately four. Of those who subscribed for papers 65 percent owned their farms and 35 percent rented them. About 60% of those taking a weekly newspaper subscribed also for a daily paper.

Value of reading original and digest versions of an article.—Because of the huge amount of reading material now available various digests of articles and books are prepared for the use of readers. This trend raises the interesting question: "What is the relative effectiveness of reading the original and digest version of an article?" To secure information on this point McClusky (66) carried on an investigation with matched pairs (intelligence and reading ability) of students in two courses in educational psychology. One group read the original article while other groups read the digest version of it. The order was then reversed with the original and digest versions of another article. The results of both an immediate and delayed test indicated "an impressive advantage" in favor of the digest version. The explanation offered was that original versions are often padded with "excessive and uneconomical verbal baggage." The fact was recognized on the other hand that certain items, such as style, coherence and atmosphere, may be lost in the abridgement.

Level of adult reading.—As pointed out clearly in Lazarsfeld's study (59) the social effects of reading are determined in part by the level of reading ability attained by adults. Facts concerning the reading achievement of certain elements of our population were secured by Scully and Mahoney (90) who gave reading tests to 500 enrollees in CCC camps. An analysis of the scores showed that 24 percent of those tested ranked at the fourth-grade or below and that the median grade score in reading was 6.4. These findings harmonize closely with the results of previous studies of similar groups. Data which the investigators secured indicated that possible causes of unsatisfactory achievement in reading were low native intelligence, the influence of foreign birth or parentage, and limited opportunities for reading in the home. The investigators rightly concluded that the camps and other adult agencies face challenging responsibilities in relation to the reading interests and habits of adults. Unless the reading achievement of a considerable proportion of our adult population can be greatly improved in the future reading cannot serve its largest function as a means of personal development and social progress.

READING INTERESTS

From ten to fifteen percent of the studies relating to reading that are published yearly pertain to the nature and extent of the reading interests of children and adults. The large importance of this field of study arises from the fact that the intensity of a child's interest in reading influences to a considerable extent his willingness to apply himself and the rate at which he learns to read. Furthermore, the character and range of his reading interests are significant measures of the effectiveness of the guidance provided and the value which reading will doubtless play in extending and enriching his experiences. Important findings of the studies reported during the year can be summarized advantageously for readers at different levels of advancement or maturity.

Elementary School Pupils.—In 1938, Wilson (109) secured the cooperation of 152 parents of children in the kindergarten and the first and second grades of the Model School of Hunter College in a study of the nature of the reading interests of their children before they entered school and at the time the questionnaire was submitted. The reports indicated that a large proportion of them had shown interest in reading long before they entered school. This was explained in part by the fact that children's books

were available at an early age and that adults had read or told stories to them. The reading preferences as reported by the parents "were varied and showed only small grade-level differences."

A somewhat discouraging view of the success of elementary schools in promoting the reading interests of pupils was secured by Smith (93) in a survey of seven communities in New York State. She found that pupils show "a general lack of knowledge of good current books for children." The fact was deplored that inferior books are read in increasingly greater numbers as children advance through the grades, rather than the good wholesome ones. In harmony with previous findings Smith reported the predominance of general fiction and animal stories in the recreational reading of children, also the superiority of the books read by boys as compared with those read by girls. The influence of the social studies was reflected in the large number of books read relating to children in other lands. With respect to magazines, the survey showed that a wide variety were read by more than half the pupils "with little influence from the school or library. Evidence indicates a great need for the study of pupil reading of magazines within each community."

That the comic strip "is one of the most common leisure-time interests of children of the fourth, fifth, and sixth grades" was shown clearly by the results of a study by Hill and Trent (52) who secured information from 256 pupils. The responses showed that they liked funny strips "primarily for the adventure, excitement and action portrayed, and secondarily for their humor." Their interests in this connection were not unlike those "in reading, in the radio, and in the movies." The investigators indicated that they were extending the scope of their study to include "an analysis of the ethical content of selected comics."

A study by Williams (108) of the preferences of children above the third grade for books in the field of science revealed the following facts. "Books about animals, especially those dealing with habits and activities of animals, were popular . . . They enjoyed books which told about animals they had not known before or which gave new information about animals with which they were familiar. Books about how things work and books on the development of modern conveniences from simple early forms" made a definite appeal. "Books dealing with aviation and electricity were popular with the majority of the boys but the girls seemed to lack the necessary background to enjoy these books." A small group of children were en-

thusiastic about books dealing with astronomy, birds, reptiles, and fishes. As implied by the preceding statements, there was wide variation in the preferences of children depending upon special interests.

In harmony with the results of previous investigations, Lewis and McGehee (60) found in a study of several thousand elementary-school pupils that superior children are far more interested in reading than those who are retarded. This was true even in the case of "funny papers" which made their primary appeal to children of superior mental activity rather than to the mentally dull. The evidence secured showed also that the two chief handicaps of the retarded children were low mental ability and paucity of interests. In a study of seventh and eighth grade pupils, Davis (29) found that the honor roll pupils were better and more varied readers than other groups of pupils. They tended also to show more advanced judgment in the selection of favorite books. One explanation lay in the fact that they were better supplied with reading material than many of the other pupils and used the library much more frequently. The fact that a large proportion of the pupils did not "go beyond the mystery book or the picture magazine type of reading" was decried. Further study of the issues involved and appropriate remedies were recommended.

Of special importance are the findings of Thorndike (101) who made a study of the preferences of 2891 pupils in Grades IV to XII inclusive, through the use of a list of fictitious titles. An analysis of the responses of the pupils led to the following conclusions: "(1) Within the same sex the interest patterns of groups differing by several years in age and/or as much as thirty points in average I.Q. show a substantial positive correlation." "(2) In their pattern of reported reading interests, bright children (median I.Q. about 125) are most like a group of mentally slower children (median I.Q. about 92) who are two or three years older than they are." "(3) Sex is conspicuously more important than age or intelligence as a determiner of reported interest pattern, at least within the range of age and ability here studied." "(4) The acceleration of interest in bright children does not seem to be entirely, or even predominantly a scholarly or bookish precocity." Acceleration is manifested "as clearly in an early interest in mystery and violent adventure as in an early interest in science and invention." The fact remains, however, as pointed out by Boynton (14) in a study of about 4800 sixth-grade pupils that pupils of superior mental intelligence engage

more frequently than those of lesser intelligence in the reading of science, history, biography and the like.

As a means of influencing the reading interests of seventh and eighth grade pupils, the Chicago Radio Council presented a series "of weekly dramatizations of books specifically recommended by librarians for seventh and eighth grade pupils." Through the use of questionnaires submitted before and after the broadcasts Reid (82) studied their influence on the reading interests of the pupils. He found that the broadcasts did not increase the number of interests of the pupils but did stimulate them to read more books. However, only two of the five books dramatized were read widely. Evidence of significant differences between boys and girls in number of reading interests, in number of books read, and in story preferences was secured.

High-school pupils.—Studies made by Russell (86) of the reading preferences of younger adolescents in Saskatchewan led to three important conclusions. The first related to marked differences in the reading interests of boys and girls, "particularly in the scientific and news materials of the boys and the more adult reading of girls in general fiction, movie, and women's magazines." The second related to the close relationship between availability and the reading of books and magazines. As a result the investigator emphasized the importance of making desirable types of reading material available in high schools. The third related to the similarity in the reading of these Canadian youth and certain American pupils. "It may be that similar reading materials are helping produce thought-patterns and a cultural solidarity important not only in Canada and the United States but in any countries whose destinies are interlinked."

A much less encouraging picture was presented by Brink, Garfield, and Witty (16) who studied the reading habits and tastes of 582 negro pupils in a large high school in the Chicago area. They secured abundant evidence "that these students do a small amount of voluntary reading. Moreover, when they do read, they turn to printed materials which require a minimum of effort . . . or to highly stimulating or exciting stories." The investigators were definitely critical of the small effort made by the school to reach these pupils. They urged that the reading teacher "provide abundant, easy reading materials, rich in content, and suited to individual interests and abilities."

As an aid in attacking the problem presented by those who do not read Blair (9) reported a list of 100 books most enjoyed by retarded read-

ers in senior high schools, based on reports received from principals in various sections of the country. The need for vigorous effort to elevate the reading interests of high-school pupils was stressed also by Block (12) who studied the radio, magazine, and newspaper interests of 61 high school students. Obviously, such effort is essential if the cultural level of America is to be materially increased in the near future.

Junior college students.—The fact that the reading interests of young people may be greatly influenced by the character of the times is shown by the findings of Moreland (69) who discovered that in 1939 one of the questions of most interest to both sexes dealt with international relations. His records indicated significant sex differences in the reading interests of the two groups. He urged that librarians give added sympathetic consideration to the subject interests of young people. Further evidence of likes and dislikes of this group was secured by Fendrick (38) who asked both high school and college students to check a list of 35 categories of newspaper topics. Illustrations and amusements were most favored; political events, governmental affairs, photographs and home news ranked second in importance; speeches and financial news were consistently disliked. There appeared to be a sex difference postulating preference of girls for such topics as "Book Reviews, Religion, Vital (births, marriages, etc.) News, Poetry, Scandal, and Society news." Boys preferred sports, foreign news, scientific material and articles relating to crime. Fully half of both the high school and college students reporting read the newspapers with extreme regularity.

County school superintendents.—Lafferty (57) analyzed the reading interests of a group of 195 county superintendents and concluded that their effort "to broaden their own range of information and interests in general problems and issues of current concern" was far from satisfactory. He concluded that their reading interests must be considerably broadened "if they are ever to play a substantial part in developing learners who will easily and naturally fit into the existing social scheme."

READING ACHIEVEMENT AND FACTORS INFLUENCING IT

Only a limited number of investigations belonging under this general heading were reported during the year. A study by Fridiana (40) of the central tendency in the achievement of pupils in a parochial school showed

that they ranked fairly well in comparison with their chronological and mental ages. The striking fact revealed was the wide variability in achievement at each grade level which led to emphasis on the need for diagnosis and the better adaptation of instruction to individuals. Similar findings were reported by Hildreth (51) as a result of silent reading tests given to pupils in Grades II to VIII in one community.

Two studies of the achievement of negro pupils were reported. Goodlett and Calloway (44) gave the Ingraham-Clark Diagnostic Reading Tests to 480 negro pupils in Grades II to VI of a county in West Virginia. The scores were converted into Reading Quotients and Accomplishment Ratios. In harmony with the results of earlier studies, these pupils ranked definitely below expectancy in most schools and grades as measured by Reading Quotients. In many instances the Accomplishment Ratios were superior to the Reading Quotients. As in the case of the studies relating to Reading Quotients wide variability was a striking characteristic of the achievement of groups. Davenport (28) gave reading tests to negro college students and found the average score for different groups on entrance varying from 8–1 to 10–9. Tests were administered again near the close of the senior year and it was found that only a few of the groups had attained twelfth grade standing, or above, in reading achievement. The investigator rightly concluded that entering freshmen ranked far below the level essential for college work. He found also that the several curriculums differed widely in their ability to promote improvement in the reading habits of students.

In a study of the reading level of a group of socially maladjusted boys Fienberg and Reed (37) found that many were sufficiently retarded in reading to meet continuous defeat in school activities and would therefore be likely "to look for success in spheres less socially desirable." No conclusion was reached as to whether the emotional condition or the reading situation was the chief causal factor.

Throughout the studies reported during the year differences in intelligence, home environment and school opportunities are referred to in explaining variations in reading achievement. Fridiana (40) found a relatively high correlation between mental age and reading achievement in most elementary grades. The data secured by Goodlett and Calloway (44) indicated a slight but consistent superiority among girls in reading. In a study by Broom (18) involving Anglo-American and Spanish-American children

similar results were secured but they did not prove to be statistically significant. Nationality on the other hand did effect achievement to a significant extent.

STUDIES OF READING MATERIALS

As a first step in meeting the needs of pupils in one-teacher schools of low income communities in Kentucky, Seay and Clark (91) summarized statements from thirty-four sources relative to the nature of desirable reading material for use in elementary schools. From this longer list, criteria were selected for use in preparing simple readers adapted to the needs of the children involved in the experiment. The criteria were organized under the headings: material, vocabulary, structure, illustrations, mechanical make-up. The procedure adopted, rather than the specific criteria selected, is of major importance.

Langston (58) selected a core vocabulary for preprimers of seventy-nine words by analyzing, first, the vocabularies of ten pre-primer reading programs not included in either the Gross or the Curtis study. His findings were next compared with those of Gross and of Curtis. The 79 most frequently used words in the three lists were then selected as a core vocabulary. This vocabulary comprised over two thirds of the total running words in the thirty-two preprimers included in the study. It is limited to "the common spoken vocabulary of children at the age" they normally read preprimer material, and it "will have a carry-over value in reading throughout the primary grades." Stone (98) reported "the one hundred most important preprimer words" based on an analysis of the vocabulary of twenty preprimers published between 1931 and 1940.

As an aid in selecting preprimers, primers and first and second readers Spache (95) developed score cards, based upon Hockett's studies of the vocabularies of readers and the recommendations of experts and investigators in the field of beginning books in reading. He then ranked preprimers, primers and first and second readers in respect to vocabulary characteristics which could be numerically scored. The books thus measured were then arranged so that those of a given level could be compared. Significant characteristics of each book as well as the order in which they could be used to best advantage were identified. Because of the care and thoroughness with which these studies have been made, the score cards and the numerical standards provided, and the scores attached to certain characteristics of the

various books should be examined with care by all who prepare and who use basic books in beginning reading.

The vocabularies of five textbooks in third-grade arithmetic were analyzed by O'Rourke and Mead (73). Among the items identified were the number of running words, number of different words, average repetition of words, the distribution of the words according to placement in Gates' Revised Vocabulary List, and the classification and frequency of the proper nouns included in the five books. In addition the frequency in each book of thirty technical terms, and the number of pages on which they appeared were reported. An analysis of the data secured led the investigators to raise the following questions: "Can these essential elements (of arithmetic) be learned readily if the textbook used as a basis of teaching has a vocabulary load which causes the pupil to have a feeling of frustration?" "Can the vocabulary of any of the books studied be curtailed or developed to avoid frustration?" "Would it not be possible in many instances to focus more attention on the words which provide the mathematical information of the problems presented for solution?" "Have proper nouns a place in arithmetic textbooks?" On the basis of their findings the investigators concluded that some publishing companies are beginning to give specific attention to the vocabulary load of arithmetic.

Sentence length as well as vocabulary load is recognized as influencing the readability of a book. In order to stimulate supervisors and teachers to study sentence length in selecting reading and supplementary books, Stewart (97) analyzed six series of readers used widely in east central Wisconsin. She found wide variation in sentence length in both beginning books and in materials for the middle grades. "The series are fairly consistent in stepping up the sentence lengths for the higher grades, but the steps are quite different in the various books." More research was recommended to determine "how much the variations in sentence length add to the relative difficulty of a reader."

Certain characteristics of science books were identified by Williams (108) in a study referred to earlier in this report. She found that books in which the content is "presented in a direct manner circulated more frequently than books in which the essay type of approach was used." Similarly books with many illustrations, books with colored and photographic illustrations, and books in which illustrations were an integral part of the content were preferred. As revealed by observation, children were

often "annoyed by the author's digressions." Most of them "preferred factual material to the narratives." Only stories "which were in and of themselves good, pleased the children."

THE TEACHING OF READING

Various topics are included in this section which relate to problems of reading instruction or to the pedagogy of reading.

Reading readiness.—Evidence of the value of a well-conceived reading-readiness program was secured by Ring (83) who gave specific attention to the physical, personal, and intellectual development of pupils during the first half year before reading instruction was introduced. She found that the reading readiness group progressed faster after reading was begun than did two other groups of comparable size, chronological age, and mental age. By the end of the second and third years in school the experimental groups equalled the control groups although the former had received five months less instruction in reading than the latter.

The value of reading readiness tests in making prognoses of progress in reading and in classifying pupils in Grade I for purposes of reading instruction has been widely discussed during recent years. Previous studies have shown that correlations between scores on reading readiness tests and progress in reading have usually varied from .41 to .66. Gates secured a correlation as high as .77 with criteria used at mid term of Grade I. Questions arise as to the relative value of teacher's judgments and reading readiness tests. Carr and Michaels (20) found rank-order correlations between teachers' rankings of pupils in November and scores on reading tests at the end of the year. The average coefficient was .79 and the range was from .64 to .94. These findings are more favorable to teachers' judgments than those secured in some of the studies reported earlier. The investigators concluded that readiness tests may be used to advantage to supplement teacher judgment early in the term and in the case of groups that are relatively homogeneous. By the end of two months, however, they believed that teachers should be able on the basis of observation and study to classify pupils as accurately as could be done through the use of readiness tests. The study showed that teacher judgment is often not an accurate basis of classification in the case of retarded pupils. The statement should be added that in the case of pupils chronologically under six years of age, Keister

(55) found that intelligence and reading readiness tests have less prognostic value than they do for older children.

A critical study by Spache (96) of the Monroe Reading Aptitude Test led to the conclusion that the norms for the visual tests included are too high because chance solutions as well as actual solutions are credited. Tentative norms for the tests are proposed in the light of his findings.

Factors influencing progress in reading in the first grade.—The studies reported during the year throw interesting light on the relationship between certain factors and progress in reading. Keister (55) found that it is possible "for children who enter Grade I before they reach the age of six to make normal progress in reading during the first year." However, the gains made tend to disappear during the summer months with under-age pupils. This loss is not made up in succeeding years, "and these pupils tend to be permanently retarded to about the same degree as they are at the beginning of Grade II." Roslow (85) secured evidence showing that intelligence and the other qualities or characteristics measured by mental and reading readiness tests influence reading progress significantly. The "section with greater intelligence and reading readiness contained the superior readers and the section with lesser intelligence and reading readiness contained the inferior readers." He found also that under appropriate conditions children below a mental age of six and below the average in I.Q. and in reading readiness can learn to read. No evidence was cited concerning the permanence of their progress. Peck and McGlothlin (79) correlated scores on information and reading readiness tests and data concerning mental age and personality adjustment with progress in learning to read and secured correlations of .617, .623, .622, and .604 respectively. Dunklin (34) pointed out the additional fact that poor attendance and uncorrected physical defects limit the effectiveness of instruction in reading provided for first-grade pupils.

Methods of teaching beginning reading.—Teachers and investigators have been and continue to be keenly interested in developing better techniques for teaching beginning reading and in identifying procedures that facilitate progress in learning to read. Dice (32) compared the effectiveness of the direct approach (immediate meaningful experience and reading from books) with the preparatory approach (a period of reading readiness followed by reading from books and supplementary reading material). Paired groups from ten schools were involved. The records secured led the experi-

menter to conclude that in general the direct approach was slightly superior in producing skills in word recognition, in ability to comprehend and interpret sentences, in ability to attack new and unfamiliar materials and in the amount of free reading done. When the results for the various ability groups were compared it was found that the high and average ability groups "progressed about equally well regardless of method" whereas the low ability groups "progressed significantly better." Because of the very promising results with the slow groups Dice urged further experimentation with various types of materials.

Adapting instruction to individuals.—Previous sections of this article have emphasized the varying stages of readiness for reading among children when they enter school and the wide range in the reading achievement of pupils at each grade level. As a significant means of coping with such situations, some form of adaptation of instruction in reading has been widely recommended. Dunklin (34) presents evidence that "reading failures in first grade can be prevented to an appreciable degree by such adjusted instruction as is possible in a city school system." Of primary importance in this connection is the use of diagnostic procedures to discover needs, "a supply of reading material either published or especially prepared, which will afford each child successful reading experiences at each stage in his development," and the use of appropriate teaching procedures for each child.

In a study including second-grade children, Olson and Davis (72) permitted "freedom in the choice of the quantity and type of books to be read from a library." The number of books read were compared with growth curves in selected aspects of physical and mental development. They concluded that "when an environment is provided which is stimulating the child reacts to it in terms of his total potentialities for growth." On the basis of such evidence the investigators emphasized the fact that all the factors that influence the growth of pupils must be considered when adapting reading instruction to them.

Hildreth (51) collected and classified reports from twenty-two experienced teachers in various public and private schools, grades one to eight, concerning the methods used in individualizing reading instruction. She found that the following methods were most commonly used in the primary grades: "sub-grouping of pupils in regular class groups, individual coaching for the slower pupils, differentiated materials, the development of school and classroom libraries, visits from the city librarian and the loan of books,

reading club activities, various games and drills." In the middle and upper grades, the following methods were reported: studying the pupil's needs, "sub-grouping and reclassification of pupils, isolated individual coaching for extreme retardates, differentiated materials, organization of classroom libraries, use of the school library, excursion to the city library, unit projects and activities . . ." etc. Adequate study and sympathetic understanding of each child's requirements were stressed.

Oral reading.—A study made by Kirby (56) in seventeen schools showed that the respective faculties believed in the value of oral reading and would devote on the average about 50 percent of the time for basic instruction in reading in each grade to oral reading. Such emphasis was justified on the ground that most attention is given to silent reading in the content fields. The importance of oral-reading tests or surveys was stressed by Madden and Pratt (67) who gave tests to 1154 pupils in grades three to nine inclusive. The purpose was to discover possible causes of difficulties in the poor reading of certain pupils. The results supplied convincing evidence of the value of oral reading tests in determining the needs of pupils throughout the elementary school period.

Phonics and word recognition.—During recent years the adequacy of phonics in sounding out polysyllabic words has been questioned. Dolch (33), for example, reviewed the fact that 24 important phonograms accounted for only 11.6 percent of the 8,509 syllables in a sampling of 14,000 running words. This was explained by the fact that most syllables begin with consonants. Accordingly he studied the 8,509 syllables previously identified to discover what the common syllables are that pupils should know. He found that the inflectional endings -ing, -ed, and -er were the most common. Other highly important syllables include the prefixes in-, de-, con-, ex-, com-, pro-, un-, and dis-; and the suffixes -ly, -tion, -ment, and -ful. Pointed questions were raised concerning the most appropriate time and method by which important units of polysyllabic words should be taught.

House (53) carried on experiments to determine "how successfully fourth-grade pupils can master the use of a complete symbolization, as measured by independent analyses of unfamiliar words." The three methods used were "regular spelling with diacritics," the "Webster system of phonetic respelling with diacritics," and "the International Phonetic Alphabet." On the basis of his findings the experimenter concluded that "fourth

grade pupils can learn to use any type of complete symbolization if it contains one symbol, and only one symbol, for each sound in the English language." Because of the very nature of the English language House rightly urged that pupils should be taught to use some system of symbolization very effectively.

The importance of developing greater independence and accuracy in word recognition is strikingly illustrated by the findings of Anderson (3) who analyzed the oral reading errors of poor silent readers as previously reported by Swanson. After attempting to explain the appearance of poor readers among college students Anderson concluded that if "children do not work out effective methods of words analysis of their own, they should be given some assistance which usually means some systematic instruction in phonics of either the direct or the indirect variety." In a study of good and poor spellers, Spache (94) concluded that poor spellers also "are lacking in auditory discrimination and phonetic skills and knowledges."

The development and enrichment of meaning vocabularies.—In harmony with the results of earlier experiments studies made during the year supply convincing evidence of the value of specific efforts to develop and enrich the meaning vocabularies of pupils. The methods used varied widely. In an experiment with fifth and eighth grade pupils Bradley, Cahill and Tate (15) placed the words on the board, pronounced them to the class and had the class pronounce and find them in the dictionary, discuss their meanings, and enter the words and meanings in their notebooks. Sanderson (87) working with fifth-grade pupils pronounced the words for them and used each in a sentence. The pupils then wrote from dictation sentences containing the test words and looked up unfamiliar words in dictionaries to clarify meanings and to discover other meanings for the same word. In studies with college students Bernard (8) asked them to list difficult words selected from assigned reading in courses, to define orally the words on their lists, and to use them in sentences. These sentences were discussed, roots of words were explained, and other steps taken to clarify meanings. Curoe and Wixted (27) reserved three minutes a day for "focal attention to Today's Words" with college seniors. During this period the students were given help on "meaning, syllabication, spelling, pronunciation, word building, etc." Blair (11), working with juniors and seniors in a university, had them look up the meaning of every new and unfamiliar word encountered, report at the beginning of each class period the words studied

since the last class meeting, and keep a permanent record of all new words and their meanings.

The impressive fact emphasized by the foregoing discussion is that no single or uniform method for clarifying and enriching meaning vocabularies was used. In every case, however, the new word and its meaning was brought consciously to the attention of the learner. In order to secure information concerning the methods most commonly used in developing a meaning vocabulary, with special reference to the middle grades, Addy (1) surveyed the literature for suggestions from authors and submitted the list thus secured for checking to 250 teachers, principals, and supervisors. The "sources of words taught" that were checked most frequently were the content subjects, literature, supplementary reading material; the technique used most frequently in teaching new words were studying the word in its context, securing the meaning from a dictionary, studying synonyms and antonyms; the types of lessons used most often to fix meanings were informal and incidental teaching, supplying correct words to complete statements, and the selection of the best descriptive words. Those interested in the results of this study should go over Addy's report in detail.

In a study among university students, Carroll (21) failed to find that "the teaching of word derivation in Latin classes" aided in enlarging meaning vocabularies. "It is quite possible, however, that the teaching of derivation could be effective if specific attention were paid to the derivation of less common words not familiar to students."

Reading in the content fields.—The importance of reading ability as related to scholastic achievement was stressed by Anderson and Dearborn (4) as a result of a study including 68 pairs of college freshmen. The data which they secured showed clearly that there is a "positive relationship between reading ability and college achievement, even when only such differences as vary independently of intelligence are considered." Brown and Lofgren (19) studied the difficulties of students failing during the first two years of college and found that in reading tests utilizing different types of subject matter, "the failing groups achieved their lowest relative performance in reading English and language material, and their highest relative performance in reading material in natural science." One of the outstanding facts revealed by the study was that failing students differ from successful students not so much in pattern of achievement as in level of achievement.

More detailed studies of relationships brought out other significant facts. Peake (78) found correlations varying from .426 to .933 for the different grades in elementary schools, and of .814 for the group as a whole between silent reading ability and spelling ability. These findings indicate that "abilities in these two subjects tend to accompany each other." In a study involving 355 pupils in Grades 4B through 8A Coffing (24) found varying, but marked, correlations between scores in paragraph meaning and arithmetic reasoning.

The value of guidance in reading in the content fields was shown by the results of several studies. In an experiment involving 241 ninth-grade pupils Hemphill (50) secured evidence that most pupils in beginning algebra improve in ability to read verbal problems if under the guidance of their teachers they study the vocabulary of their text and selected reading exercises that involve mathematical material. Furthermore, Phipps (81) secured evidence from five sixth-grade classes that training in the meaning of the vocabulary of history and the building of history concepts greatly facilitated the reading of history material.

One of the important requirements of pupils in the social studies is ability to interpret data. As a result of tests in comprehension and ability to interpret data given to 90 junior high school pupils Grim (48) found that the two abilities are positively related (eighth grade, .51; ninth grade, .52; seventh grade, .66). Whereas achievement in one is apparently related to the other, "the correlation is not positive enough for accurate prediction." As a result of specific guidance at the college level in the interpretation of historical data, Teller (99) secured clear evidence of improvement "Not only did the members of the experimental group show greater improvement in their ability to interpret data, but they developed a more critical attitude toward current educational problems than did the conventional group."

In order to determine the effect on attitudes of high-school pupils of material containing propaganda, Bateman and Remmers (6) made use first of propaganda opposed to the original position of the pupils and second propaganda favoring their original position. The data secured provided clear evidence of significant shifts in the direction indicated by the material used, not only immediately but over a period of two months. Further analysis revealed the fact that "the girls showed a tendency to be influenced more by propaganda than did the boys."

Remedial reading.—Significant is the fact that all but one of the studies of group remedial reading reported were at the high school and college levels. It indicates, on the one hand, that high schools and colleges are becoming increasingly aware of the problems associated with poor readers and, on the other hand, that elementary schools are emerging from the period of chief emphasis on remedial reading and are attacking their problems along broader lines.

Four studies reported the status of remedial reading programs in high schools and colleges. Blair (10) secured information from 379 senior high schools and found that the following procedures were employed in dealing with poor readers: "doing nothing or very little," 75; "responsibility placed on teachers," 26; "responsibility carried by English teachers in regular classes," 34; "provide special sections of English and classes in remedial reading," 198; "provide specialist who coaches individuals or small groups," 28; "other methods," 9; "methods not definitely stated," 9. Charters (23) sent out inquiries to 675 colleges concerning the status of remedial reading. One hundred seventy-two replies were received of which 106 reported projects in remedial reading. The most striking fact revealed was that the methods used were all successful. The names of the twenty-four institutions which seemed to have the most seasoned programs were listed. Witty (110) also sent inquiries to 131 colleges and universities and found that 41 were giving remedial instruction, which was a higher percentage of replies than Charters received. After analyzing the various items of information submitted Witty concluded "that remedial work in colleges has made very little progress." He does not believe that the solution of current problems at the college level lies in the provision of remedial work for poor readers; the broader problem is the provision of educational opportunities adapted to the diverse interests and abilities of those who go to college. Zerga (114) sent inquiries to the 49 public and private junior colleges of California and found that at least ten of them provided remedial programs. The replies indicated wide divergence in practice and led to the conclusion that remedial reading in junior colleges is still in an experimental stage.

All of the specific programs that were reported were reasonably or highly productive. Space will permit only brief reference to some of the significant conclusions. Reporting on the results of remedial reading given in elementary schools, Orr (74) pointed out that the effects are evident in the junior high school and that the amount of improvement depends upon

"the attention that could be given to him (the pupil), his physical condition, his home environment, the extent of his disabilities, his state of emotional disturbance, and the skill of the teacher." As a result of studies involving 373 entering students, Nutterville (71) concluded that "there is a definite need for curriculum adjustment in the high school which will provide courses suitable to the needs and abilities of students with reading difficulties not only in English, but in social science, general science, and mathematics." She found also that "the techniques used in the remedial reading program are transferrable to other subjects." Thompson (100) carried on a two-year controlled experiment in 24 selected high schools of Nebraska to determine the best procedures to be used in the administration of diagnostic and remedial work and as a result proposed answers to nine questions such as the following: "How shall the program be articulated with the rest of the school activities?" How shall pupils be selected for remedial reading? "What shall be the method of instruction and the type of materials used?"

PROBLEMS RELATING TO READING DISABILITY

The causes and remediation of the more severe forms of reading disability continue to attract wide attention. The studies reported during the year can be conveniently summarized under headings relating to possible causal factors.

Vision and visual efficiency.—The first two studies to which reference is made present types of comparisons which have not proved particularly illuminating in the past. Walker and Molish (106) compared the eye-movement records of 96 college students with the results of examinations through the use of the Keystone Telebinoculars. No significant relationships were discovered between the number of fixations and regressions and any factor of vision measured by the Keystone tests. Wolfe (112) compared two groups of nine-year-old boys, one group retarded and the other average in reading achievement. The results of the Betts Ready to Read Vision Tests showed that the two groups were not significantly different in any function measured. The Betts Oculomotor and Perception Tests showed that the poor readers made more reversals in the case of letter orientation but not in number orientation. The Gates Perception Tests showed that the poor readers were consistently inferior to the average readers. Such differ-

ences, in the judgment of the investigator, may "predispose to reading difficulty."

To determine the extent to which and the reasons why visual deficiency effects reading disability has been a significant purpose of studies carried on by Dearborn over a number of years. In a recent report (30), he reviewed evidence indicating that visual fatigue influences the velocity of eye movements and that "conflicting visual excitations in the perceptions of words may cause sufficient interferences with fusion or with the processes of apperception to be fatiguing." He concluded that the making of the necessary readjustments and the fusional delays involved would "not only interfere with the orderly processes of reading and learning to read, but, by being more fatiguing, lessen the incentives to learn. Hence, the aversion, the avoidance or the neglect of reading which, to a greater or less extent, marks the course of the 'non reader' and the 'hard reader'." Dearborn's approach to the problem and the tentative conclusions reached merit further intensive study.

As a result of studies carried on by Parkins (75) evidence was secured that the following basic visual skills, other than visual acuity, are required for efficient reading: "the ability to make accurate fixations"; "the reserve necessary to maintain a fixation"; "the ability to accurately and rapidly change from one fixation point to another"; and "broad zone of perception." Of the various types of rotational exercises that may improve fixation ability, those provided through "the Binocular Synchronizer produces the most satisfactory results." Increase in reading efficiency followed the improvement of fixation ability. In a study by Apperson (5) the assumption was made that factors which might prevent reading efficiency, other than visual acuity, were "defective fixation ability, poor projection sense, narrow zone of recognition, and suppression of vision." Through the use of three types of instruments—one giving rotational exercises, a stereoscope which stimulated binocular vision, and convergent-divergent synchronizers—orthoptic training was provided for students in a teachers college most of whom were in need of remedial training in reading and for other students who ranked average or above in reading ability. Tests of reading ability showed that gains were made during the training period. Supplementary research by Worcester (113) led to the conclusion that orthoptic training seems to be more effective with students "whose scholastic aptitude is superior to their reading ability and who manifest certain

functional limitations in the visual mechanism." Least improvement resulted among students "whose scholastic aptitude is lower than their reading ability and who manifest only slight visual limitations." The studies by Parkins, Apperson, and Worcester should be repeated under conditions that would free them from the possible criticism that they reflect the biases of optometrists.

Several investigators were concerned chiefly with the development or critical evaluation of instruments for use in measuring visual efficiency and eye-movements in reading. Sloane (92) described the nature and development of the Massachusetts Vision Test, "an improved method of testing eyes of school children." It includes tests for (a) visual acuity, (b) heterophoria at distance and near vision, and (c) latent hypermetropia. The results reported indicate that this battery "tends to screen out more effectively than the single Snellen Test." Cole (25) analyzed critically the responses of 90 students in a teachers college and ten children to the Betts Telebinocular Tests "to determine whether there is an indication of inaccurate tests within the series." The large number of questionable responses to the fusion tests led to the conclusion that they may be invalid. Since Cole did not specify the edition of the fusion tests used, it is possible that these errors have been corrected to a greater or less extent in recent revisions.

Anderson (2), Witzeman (111), and Broom (17) reported evidence concerning the reliability of the Opthalm-o-graph. Each was critical of the results secured when very short passages, such as those now commercially supplied, were used. The investigators differed in their judgment concerning the validity and reliability of this instrument when used under ideal conditions. Anderson holds that it yields little more than does a good standardized reading test. Because it is an individual test it is costly of time and effort and requires a specialist to operate it effectively. Witzeman and Broom each attach much greater significance than Anderson to the Opthalm-o-graph as a device for measuring eye movements. Anderson and Witzeman also reported the results of critical studies of the Metron-o-scope. The former maintained that about all that can be hoped for through its use is reading in larger units and reacting more quickly to words. The latter found that significant gains in both rate and comprehension were secured as a result of 36 remedial exercises with the metronoscope.

Auditory functions including auditory memory span.—Wolfe (112) gave the Monroe Auditory Discrimination, and the Gates Test of Auditory

Memory Span to two groups of nine-year-old pupils, one group retarded in reading achievement and one group average. The scores showed that the retarded group scored low more consistently on the tests than the average groups. None of the functions studied was sufficiently characteristic of retarded readers to be regarded as causative of reading difficulty.

Through observation and the use of tests, Schmidt (88) identified pupils who were designated as "auditory learners," that is pupils who learned "auditory presentations of visual learning materials" more effectively than "visual presentations of the same material." These pupils were then paired and the experimental group given auditory instruction, that is new materials were always presented by auditory methods; the control group was given regular remedial instruction. At the end of the experiment the experimental group had made an average gain in reading of 3.2 grades while the control group which ranked slightly higher in median I.Q.'s had made an average gain of 1.19 grades. The importance of the aural factor in learning to read was emphasized also by Gray (45) as a result of experiments involving the use of sound-films with Spanish children in the primary grades.

Speech.—Gaines (41) reviewed evidence from various experimental studies and reports which led to the conclusion that "many children with speech defects are not retarded in reading, and many reading disability cases, at the time or in their early histories, show no evidence of speech defects." As a result of her study, however, she reached the same conclusion as did Monroe, namely that "the factors which affect speech may . . . also effect reading."

Laterality of function.—In harmony with the results of previous studies, Wolfe (112) found that hand dominance did not significantly differentiate two groups of nine-year-old pupils, one group including average readers and the other retarded readers. The fact that laterality of function is of minor significance in reading disability cases was further emphasized by Castner (22) who found in a study of 160 cases that "in general, dextrals and sinistrals develop the same sort of problems, but that sinistrals, and especially the mixed and impartial-eyed types, are rather more likely to develop them than those who are completely dextral."

Emotional status.—As a result of clinical observations and the reports of teachers, Wolfe (112) concluded that the emotional adjustment of poor readers was significantly inferior to that of average readers. Furthermore,

"the factors of attention and motivation, as observed clinically, appeared to be of great importance in differentiating the poor readers from the good readers."

COMPARISONS AND INTERRELATIONSHIPS OF PSYCHOLOGICAL FACTORS

Fifteen or more studies presented comparisons and interrelationships between aspects or factors involved in reading that were very illuminating.

Relative advantages of reading and listening at controlled rates.—As a result of studies involving 280 adults, Goldstein (43) found that auditory presentation is relatively more effective in the case of easier material but decreases as the difficulty of the material increases. These differences are not sufficiently great, however, "to outweigh other pedagogical or practical considerations." The statement should be added that "the differential in favor of listening, and the greater difference on easy than on hard material, both tend to be more marked for the less intelligent groups."

Relationships between reading and spelling.—The fact was pointed out earlier that according to Peake (78) abilities in reading and spelling "tend to accompany each other." As a result of studies involving 525 fourth and fifth grade pupils, Phelan (80) found that the largest single factor making for variation in reading and spelling achievement was "variation in cognition." This led to the conclusion that reading and spelling both depend "on the common ability to discriminate words and letters."

Interrelationships between reading comprehension and other factors.—Bond (13) studied interrelationships between various abilities and achievements by means of the product-moment and multiple correlation technique. The high correlations between measures of reading vocabulary, reading comprehension and intelligence "indicates that the percentage of overlapping factors between these three abilities is great." As a result of a factor analysis of verbal ability, Johnson and Reynolds (54) found that the correlations between reading comprehension and word cross outs, same and opposite, verbal relations, vocabulary, restricted completion, and intelligence were .695, .686, .642, .717, .505, and .764 respectively. The size of these correlations emphasizes the close relationship between reading achievement and language mastery. This fact is further emphasized by the findings of Gibbons (42) to the effect that ability to see relationships between parts of a sentence is closely related to ability to read and understand. Furthermore, Fee (36) in a sudy of functional grammar found "a significant amount of

correlation . . . between reading skills (Iowa Silent Reading Tests) and all grammar abilities."

Nature of meaning and interrelationships involved.—Through the application of quantitative methods of psychophysics, Mosier (70) secured evidence confirming the following basic hypotheses: "first, that the meaning of a word may be considered as if it consisted of two parts, one constant and representative of the usual meaning of the word, and one variable, representative of individual interpretation in usage and associated context and general usage; second, that the frequency with which any paritcular meaning is evoked is describable by the Gaussian Law." Further understanding of the nature of meaning was secured by Lovell (61) who found through the use of tests with college students that "intensity, or richness, of vocabulary (multiple meanings), is fairly closely related to extensity, or knowledge of single commonest meaning." He concluded that "for general purposes we may estimate one from the other."

The relationship of speed to efficiency.—Studies of the relation between rate of reading and speed of association made during recent years have led to somewhat conflicting conclusions. Bear and Odbert (7) reviewed available evidence and presented the results of two studies at the freshman college level which gave little support to the assumption of marked relationship between the two functions. They discussed possible explanations for the positive relationships found by Traxler but concluded that further study should be made "of the characteristics of individuals with slow association times, and of the way they respond to different types of training."

Tinker, Hackner and Wesley (103) were concerned with the relationship between (1) speed of association and vocabulary knowledge, and (2) the quality of association and vocabulary knowledge. Evidence secured from 100 college students through the use of a series of tests showed that those "with higher vocabulary scores tended to have faster associations." A substantial but not high correlation was found also "between quality of associative response and vocabulary knowledge."

An interesting controversy developed during the year between Robinson (84) and Tinker (102) concerning the relationship between speed and comprehension in reading. The latter maintained that correlations are high in the case of easy material but decrease as the material becomes more

difficult. The former argued that such variation in the size of the coefficients are due to "uncontrolled factors." The essence of Tinker's contention is that different types of material call for different patterns of interpretation which modify the relationship between speed and comprehension.

HYGIENE OF READING

A notable contribution appeared during the year in the form of a book by Paterson and Tinker (76) entitled *How to Make Type Readable.* It is based on twelve years of research by the authors in which tests were given to 33,031 persons. A selected bibliography of 103 stated references are included. The contents are organized around the following chapter headings: Speed of Reading and Typography, Kinds of Type, Size of Type, Width of Line, Size of Type in Relation to Width of Line, Leading, Leading and Line Width in Relation to Type Size; Spatial Arrangements of the Printed Page, Black Print Versus White Print, Color of Print and Background, Printing Surfaces, Optimali Versus Non-optimal Printing Arrangements, the Summary of Recommendations. It is impossible to summarize the various conclusions and recommendations in this report. The volume should serve as a very valuable aid to printers, advertisers, and all interested in problems relating to the readability of printed material.

Specific studies reported during the year came from two sources: the University of Minnesota where Paterson and Tinker studied the "Influence of Line Width on Eye-Movements" (77) and "Eye Movements in Reading a Modern Type Face and Old English" (104); and the Lighting Research Laboratory, General Electric Company, Cleveland, Ohio, where Luckiesh and Moss carried on studies and reported on "Reading a Line of Print" (65), "The Visibility of Print of Various Qualities of Paper" (64), "The Effect of Line Length on Readability" (63), and "Criteria of Readability" (62).

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18. Broom, M. E. "A Study of Race and Sex Differences in Reading Comprehension," *Journal of Educational Research,* XXXIV (April, 1941), 587–93.

    Analyzes and interprets reading test scores secured from 9276 pupils in Grades V to VIII to determine the need for different curricula and teaching methods to provide for race and sex differences in reading comprehension.

19. Brown, C. W., and Lofgren, P. V. "The Nature of Some of the Difficulties of Students Failing the First Two Years of College," *Journal of Experimental Education,* IX (March, 1941) 209–15.

    Reports data concerning the relation of high-school preparation, reading ability, and scholastic aptitude to success in college.

20. Carr, John W., Jr., and Michaels, Matilda O. "Reading Readiness Tests and Grouping of First Grade Entrants," *Elementary English Review,* XVIII (April, 1941), 133–38.

    Presents data relative to the validity of teachers' judgments, "based on several weeks of informal study of first-grade entrants," concerning the relative success of pupils in a reading test given near the end of the first year's work.

21. Carroll, J. B. "Knowledge of English Roots and Affixes as Related to Vocabulary and Latin Study," *Journal of Educational Research,* XXXIV (October, 1940), 102–11.

    Describes the derivation and reliability of a test of ability to recognize morphemes and their meanings; reports data on the relationship between knowledge of morphemes, vocabulary development, and Latin study.

22. Castner, Burton M. "Handedness and Eyedness of Children Referred to a Guidance Clinic," *The Psychological Record,* III (June, 1939), 99–112.

    Compares the handedness and eyedness of 160 children referred to the Clinic because of individual adjustment problems with 73 cases referred to the state as dependent or neglected children.

23. Charters, W. W. "Remedial Reading in College," *Journal of Higher Education,* XII (March, 1941), 117–21.

    Summarizes replies received from a nation-wide survey to determine the status and current practices in remedial reading at the college level.

24. Coffing, Esther A. "The Relationship between Silent Reading Ability and Arithmetical Ability," *School Science and Mathematics,* XLI (January, 1941), 10–14.

    Presents conclusions based on scores of 355 pupils in Grades IVB to VIIIA on the Paragraph Meaning and Arithmetic Reasoning sections of the New Stanford Achievement Test.

25. Cole, Gerald. "A Critical Analysis of the Results of the Betts Telebinocular Tests," *Elementary School Journal,* XLI (March, 1941), 533–37.

    Analyzes critically the responses of one hundred persons to the Betts telebinocular tests to determine evidence of inaccuracy in the series, if any.

26. "Comments and Review of Apperson's Report and Comparison of Results through the Use of Various Training Procedures," American Research Council of Optometry, Bulletin No. 22. Ord, Nebraska: American Research Council of Optometry, 1940.

    Compares the progress in reading of an experimental group receiving orthoptic training but without formal educative training, for thirty consecutive weekdays, with that of a control group receiving educative training but no orthoptic training.

27. Curoe, Philip R. V., and Wixted, William G. "A Continuing Experiment in Enriching the Active Vocabularies of College Seniors," *School and Society*, LII (October 19, 1940), 372–76.

    Compares the progress of an experimental and a control group to determine the value of devoting three minutes of each class meeting of senior students to a "Today's Words" project.

28. Davenport, Roy K. "A Negro College Examines Its Curricula by Measuring Improvement in Reading," *Journal of Negro Education*, X (April, 1941), 178–84.

    Compares the achievement scores of pupils on vocabulary and comprehension tests given at the beginning of their Freshman year and near the close of their Senior year.

29. Davis, Warren M. "A Survey of the Reading Habits of Children," *Ohio Schools*, XVIII (December, 1940), 488–89.

    Summarizes questionnaire returns for seventh- and eighth-grade pupils relative to use of libraries, availability and use of newspapers and magazines, type of books enjoyed most, and types and number of books read within a time limit.

30. Dearborn, Walter F. "On the Possible Relations of Visual Fatigue to Reading Disabilities," *School and Society*, LII (November 23, 1940), 532–36.

    Reviews evidence from various sources supporting the assumption that visual fatigue is an important factor in reading disability.

31. Deer, George H. "The Peabody Library Information Test: A Study of Its Statistical Validity and Reliability," *Journal of Experimental Education*, IX (March, 1941), 233–36.

    Describes the nature of the test and presents evidence relative to its validity and reliability.

32. Dice, Leah Kathryn. *An Experimental Study of Two Methods of Teaching Beginning Reading: The Direct versus the Preparatory Approach.* A summary of a dissertation submitted to the Committee on the Degree of Master of Education, Johns Hopkins University, 1941.

    Presents the results of a controlled experiment involving pupils from ten schools to determine the relative effectiveness of two methods of teaching beginning reading.

33. Dolch, E. W. "Sight Syllables versus Letter Phonics," *Elementary School Journal,* XLI (September, 1940), 38–42.

Reports the 101 most common syllables and the number of different words in which each appears in a 14,000 word sampling of textbooks in arithmetic, geography, and history.

34. Dunklin, Howard T. *The Prevention of Failure in First Grade Reading by Means of Adjusted Instruction.* Teachers College Contributions to Education, No. 802. New York: Teachers College, Columbia University, 1940. Pp. viii + 112.

Describes essential aspects of a program of adjusted instruction in beginning reading, and presents results of a controlled experiment to determine its effectiveness among pupils who seemed most likely on the basis of tests to be failures in first-grade reading.

35. *Family Expenditures in Selected Cities, 1935–36.* Study of Consumer Purchases, Urban Technical Series, Bulletin No. 648. Washington: United States Department of Labor, 1941. Pp. xii + 386.

Reports the results of an elaborate study in selected cities of different sizes in each of several regions of the country to determine how family expenditures for various items, including reading material, varies with income, occupation and family composition.

36. Fee, Mary. "Functional Grammar and Its Relation to Correct English Usage," *Abstracts of Doctorial Dissertations in Education,* pp. 3–14. Lawrence, Kansas: University of Kansas, 1941. Kansas Studies in Education, University of Kansas Publications, Vol. II, No. 6.

Presents evidence from 292 tenth-grade pupils concerning the relationships of reading skill, general mental ability, and cultural background to "(a) a knowledge of 'functional' grammatical principles, (b) the ability to recognize and correct errors in sentences, and (c) accuracy in the free writing of letters and compositions."

37. Feinberg, Henry, and Reed, Clyde L. "Reading Level of a Group of Socially Maladjusted Boys," *Journal of Social Psychology, XII* (August, 1940), 31–38.

Presents the results, including intercorrelations, of a study of the reading achievement and related factors of 143 maladjusted boys.

38. Fendrick, Paul. "Newspaper Reading Interests of High School and College Students," *Journal of Educational Research,* XXXIV (March, 1941), 522–30.

Summarizes information from high school and college students relative to their likes and dislikes with respect to 35 categories of newspaper topics, those relating to news which they considered most important, and the frequency of their daily newspaper reading.

39. Finley, Lester E. *Measurement of Reading in Five Weekly Newspapers.* University of Missouri Bulletin, Vol. XLI, No. 13. Journalism Series Number 84. Columbia, Missouri: University of Missouri, 1940. Pp. 52.

Presents percentages of readers giving attention to various parts of each of five newspapers, as revealed by interviews with 100 readers of each paper.

40. Fridiana, Sister M. "Achievement in Silent Reading in an Elementary School," *Journal of Educational Research,* XXXIV (April, 1941), 594–600.

Analyzes the results of silent reading tests in Grades I to VIII to demonstrate the necessity of better individualized instruction and to enlist community co-operation in securing reading materials of varying difficulty.

41. Gaines, Frances Perlowski. "Interrelations of Speech and Reading Disabilities," *Elementary School Journal,* XLI (April, 1941), 605–13. See also: *Quarterly Journal of Speech,* XXVII (February, 1941), 104–10.

Summarizes the findings of thirteen studies of the relation of speech difficulties to reading disabilities.

42. Gibbons, Helen D. "Reading and Sentence Elements," *Elementary English Review,* XVIII (February, 1941), 42–46.

Summarizes findings of a study involving 25 third-grade children to determine correlation between ability to see relationships among parts of a sentence and ability to read as determined by a standardized reading test.

43. Goldstein, Harry. *Reading and Listening Comprehension at Various Controlled Rates.* Teachers College Contributions to Education, No. 821. New York: Teachers College, Columbia University, 1940. Pp. iv + 70.

Compares reading and listening comprehension at various rates of presentation, using 280 adult subjects ranging from 18 to 65 years in age, and representing a cross-section of adult population in intelligence, educational achievement, and cultural background.

44. Goodlett, Carlton B., and Calloway, Andrew H. *The Reading Abilities of the Negro Elementary School Child in Kanawha County, West Virginia.* West Virginia State College, Department of Education, Contribution No. 10. Institute, West Virginia: West Virginia State College, 1940. Pp. 48.

Presents the results of a survey of 480 pupils in Grades II to VI in 30 Negro elementary schools to determine their achievements and needs in silent reading.

45. Gray, H. A. "Sound Films for Reading Programs," *School Executive,* LX (February, 1941), 24–25, 29.

Discusses how sound films can be used to facilitate growth in reading and presents data showing the effect of the use of a sound-film in the primary grades on improvement in vocabulary and reading ability.

46. Gray, William S. "Reading," *Encyclopedia of Educational Research,* pp. 891–926. Edited by Walter S. Monroe. New York: Macmillan Co., 1941.

Presents a brief summary of the results of scientific studies of reading published during the last century.

47. Gray, William S. "Summary of Reading Investigations, June 30, 1939 to July 1, 1940," *Journal of Educational Research,* XXXIV (February, 1941), 401–43.

Presents an annotated bibliography of 119 studies and summarizes the most significant findings.

48. Grim, Paul R. "Interpretation of Data and Reading Ability in the Social Studies," *Educational Research Bulletin,* XIX (September 25, 1940), 372–74.

Presents data and correlations which show that ability to interpret data and ability to read the social sciences are somewhat related but also differentiated functions at the junior high school level.

49. Hansburg, Henry. *An Experimental Study of the Effect of the Use of the Print Shop in the Improvement of Spelling, Reading, and Visual Perception.* Teachers College Contributions to Education, No. 776. New York: Teachers College, Columbia University, 1939. Pp. viii + 84.

Presents the results of a series of controlled experiments in Grades V to VIII to determine certain psychological effects of printing activities, namely, to improve ability to spell, to decrease the reversal tendency, and to improve ability to read and comprehend.

50. Hemphill, Reid. "Improving Linguistic Ability as a Factor in Solving Problems in Algebra," *Abstracts of Doctoral Dissertations in Education,* pp. 15–25. Lawrence, Kansas: University of Kansas, 1941. Kansas Studies in Education, University of Kansas Publications, Vol. II, No. 6.

Presents evidence from 241 experimental pupils in ten different schools located in seven cities concerning the value of vocabulary study and reading exercises that involve mathematical material in promoting ability to solve verbal problems in algebra.

51. Hildreth, Gertrude. "Individualizing Reading Instruction," *Teachers College Record,* XLII (November, 1940), 123–37.

Describes methods reported by 22 experienced teachers in their attempts to individualize reading instruction in various public and private schools, Grades I to VIII.

52. Hill, George E., and Trent, M. Estelle. "Children's Interests in Comic Strips," *Journal of Educational Research,* XXXIV (September, 1940), 30–36.

Summarizes the responses of 256 pupils in Grades IV to VI inclusive on a check list of comic strips and to a thirty-item multiple choice test relating to popular comic strips.

53. House, Ralph W. "The Efficiency of a Program of Initial Instruction on the Pronunciation Skills at the Fourth-grade Level as Evidenced in Skills Growth," An abstract of a Dissertation submitted in partial fulfillment of the requirements for the Degree of Doctor of Education at The Pennsylvania State College, June, 1940. Ann Arbor, Michigan: University Microfilms, 1941.

Presents data secured in a controlled experiment to determine "how successfully fourth-grade pupils can master the use of a complete symbolization, as measured by independent analysis of unfamiliar words."

54. Johnson, Donald M., and Reynolds, Floyd. "A Factor Analysis of Verbal Ability," *The Psychological Record,* IV (January, 1941), 183–95.

Reports correlations between the results of ten reading and vocabulary tests given to 120 summer school students.

55. Keister, B. V. "Reading Skills Acquired by Five-Year-Old Children," *Elementary School Journal,* XLI (April, 1941), 587–96.

Presents mental-test records for three groups of pupils entering Grade I (1936, 1937, 1938), and reading scores made at the close of Grade I, at the beginning of Grade II, and in May, 1940 to determine the permanence of reading skills acquired by children with mental ages below six years.

56. Kirby, Byron C. "The Return of Oral Reading," *Journal of Education,* CXXIV (February, 1941), 58–60.

Summarizes replies from seventeen elementary schools in 1940 concerning the proportion of the time used for basic instruction in reading that should be devoted to oral reading.

57. Lafferty, H. M. "Sidelights on the County School Superintendent in Texas," *Peabody Journal of Education,* XVIII (May, 1941), 357–64.

Compares the general and professional reading of official and ex-officio county superintendents.

58. Langston, Roderick G. "A Core Vocabulary for Preprimer Reading," *Elementary School Journal,* XLI (June, 1941), 766–73.

Presents the results of an analysis of twelve preprimers including an alphabetical list of 306 frequently used words, also a core list of the 79 most frequently used words as reported in three preprimer vocabulary studies.

59. Lazarsfeld, Paul F. *Radio and the Printed Page.* New York: Duell, Sloan, and Pearce, 1940. Pp. xxii + 354.

Reports a series of studies concerning the radio as an agency of communication and its relation to the use of printed materials.

60. Lewis, W. Drayton, and McGehee, William. "A Comparison of the Interests of Mentally Superior and Retarded Children," *School and Society,* LII (December 7, 1940), 597–600.

Compares the percentages of mentally superior and mentally retarded pupils, in Grades IV to VIII in 310 communities in 36 states, designated as (a) interested in various hobbies and (b) participating in various extra-curricular activities.

61. Lovell, George D. "Interrelations of Vocabulary Skills: Commonest versus Multiple Meanings," *Journal of Educational Psychology,* XXXII (January, 1941), 67–72.

Presents data from 82 students in two universities showing "interrelations of the knowledge of a single commonest meaning of a word and additional knowledge of the multiple meanings of the same word."

62. Luckiesh, Matthew, and Moss, Frank K. "Criteria of Readability," *Journal of Experimental Psychology,* XXVII (September, 1940), 256–70.

Compares the case of technical and clerical groups rate of reading and rate of involuntary blinking while reading, with defined variations in degree of illumination, leading, boldness of type face, line length.

63. Luckiesh, Matthew, and Moss, Frank K. "The Effect of Line-Length on Readability," *Journal of Applied Psychology,* XXV (February, 1941), 67–75.

Summarizes data from 24 students based on reading for intervals of 5 minutes of material set in ten-point type with 2 points of leading and in line lengths of 13, 17, 21, 25, and 29 picas.

64. Luckiesh, Matthew, and Moss, Frank K. "The Visibility of Print on Various Qualities of Paper," *Journal of Applied Psychology, XXV* (April, 1941), 152–58.

Reports the results of measurements of the relative legibility of 12-, 10-, 8-, and 6-point textype on various qualities of so-called white paper.

65. Luckiesh, Matthew, and Moss, Frank K. "Reading a Line of Print," *School and Society,* LIII (May 10, 1941), 612–15.

Analyzes an electromyogram record of a line of print, showing that the prolonged task of reading is an abnormally severe one.

66. McClusky, H. Y. "An Experimental Comparison of Reading the Original and Digest Versions of an Article," *Journal of Educational Psychology,* XXXI (November, 1940), 603–15.

Compares the comprehension of 34 pairs of college students, one group reading the original version of an article and the other a digest version of the same article.

67. Madden, Mable, and Pratt, Marjorie. "An Oral Reading Survey as a Teaching Aid," *Elementary English Review,* XVIII (April, 1941), 122–26, 159.

Reports the results of oral-reading tests based on passages from social studies and science textbooks given to 591 pupils enrolled in Grades III to VI and 563 pupils in Grades VII to IX to determine mechanical factors responsible for poor reading.

68. Moore, Joseph E. "The Relation between Library Information and Elementary School Attainment," *Peabody Journal of Education,* XVIII (July, 1940), 431–35.

Presents data secured from 130 children in Grades IV to VIII inclusive, concerning the relation between scores on a library information test and on tests of reading, literature, and language usage.

69. Moreland, George B., Jr., "What Young People Want to Read About," *Library Quarterly,* X (October, 1940), 469–93.

Summarizes information from more than eight hundred high-school and junior-college students secured through the use of a check list containing 117 topics.

70. Mosier, Charles I. "A Psychometric Study of Meaning," *Journal of Social Psychology,* XIII (February, 1941) 123–40.

Discusses the findings and implications of a study in which students in psychology were asked to rate adjectives on an 11-point scale representing a "favorable-neutral-unfavorable continuum."

71. Nutterville, Catherine. "The Remedial Reading Program in Butte High School," *Educational Administration and Supervision,* XXVI (November, 1940), 572–84.

Presents the results (a) of mental and reading tests given to all entering ninth-grade pupils and (b) of remedial instruction in reading given to all who did not reach the grade equivalent of 9.0 in reading.

72. Olson, Willard C., and Davis, Sarita I. "The Adaptation of Instruction in Reading to the Growth of Children," *Educational Method,* XX (November, 1940), 71–79.

Presents data relating to second-grade pupils which shows that they react to a stimulating environment in terms of their total potentialities for growth.

73. O'Rourke, Everett V., and Mead, Cyrus D. "Vocabulary Difficulties of Five Textbooks in Third-Grade Arithmetic," *Elementary School Journal,* XLI (May, 1941), 683–91.

Presents the results of a study to determine the number of running words, number of different words, average repetition of words, distribution of words according to placement on the Gates Vocabulary Test, classification of proper nouns, etc.

74. Orr, Dorothy. "Does Remedial Reading Carry Over in Junior High School?" *Peabody Journal of Education,* XVIII (July, 1940), 452–59.

Presents data showing the status of pupils when remedial reading began, the number of years of training, and the amount of gain; also summarizes conclusions concerning desirable procedures in remedial reading.

75. Parkins, George A. *The Diagnosis and Elimination of Visual Handicaps Preventing Efficient Reading.* Fall River, Massachusetts: Distinguished Service Foundation of Optometry, 1941. Pp. 142. (See also: American Research Council of Optometry Bulletin #22, September, 1940, paragraphs 225 to 281).

Presents data relative to the significance of inefficiency in fixation ability, analyzes records showing types of inefficiency, and reports results of experiments to determine methods of removing visual handicaps of poor readers.

76. Paterson, Donald G., and Tinker, Miles A. *How To Make Type Readable,* New York: Harper & Brothers, 1940. Pp. xx + 210.

Presents scientific standards for the selection and arrangement of type based on twelve years of experimental study of the typographical elements that affect one's ability to read print swiftly and easily.

77. Paterson, Donald G., and Tinker, Miles A. "Influence of Line Width on Eye Movements," *Journal of Experimental Psychology,* XXVII (November, 1940), 572–77.

Compares the reading performance of 20 students in reading excessively short lines (9 picas), excessively long lines (43 picas), and lines of moderate length (19 picas).

78. Peake, Nellie L. "Relation between Spelling Ability and Reading Ability," *Journal of Experimental Education*, IX (December, 1940), 192–93.

Reports the correlation between achievement in reading and spelling in the case of 355 pupils in Grades IV to VIII inclusive.

79. Peck, Leigh, and McGlothlin, Lillian E. "Children's Information and Success in First-Grade Reading," *Journal of Educational Psychology*, XXXI (December, 1940), 653–64.

Considers the relation to reading achievement while in the first grade of the range of information possessed by kindergarten and first-grade pupils, their mental ages, reading-readiness scores, socio-economic status, and behavior and personality ratings.

80. Phelan, Sister Mary Benedict, B. V. M. *Visual Perception in Relation to Variance in Reading and Spelling*. Catholic University of America Educational Research Monographs, Vol. XII, No. 3. Washington: Catholic Education Press, 1940. Pp. 48.

Reports the results of a comparative study of the results of tests administered to 460 fourth and fifth grade pupils that purport to measure perceptual, cognitive memory, reading ability and spelling ability.

81. Phipps, William Rodgers. *An Experimental Study in Developing History Reading Ability with Sixth Grade Children through Development of History Vocabulary*. Johns Hopkins University Studies in Education, No. 28. Baltimore: Johns Hopkins Press, 1940. Pp. xii + 74.

Presents the results of a controlled experiment with groups of sixth-grade pupils "to improve the reading of history material by developing facility in the use of the language of history."

82. Reid, Seerley. "Reading, Writing, and Radio," *Journal of Applied Psychology*, XXIV (December, 1940), 703–13.

Summarizes the results of studies to determine the effect of radio broadcasts among seventh- and eighth-grade pupils on their reading interests and the amount read.

83. Ring, Ona E. "Effectiveness of a Reading Readiness Program as Shown by Results of Standardized Tests," *California Journal of Elementary Education*, IX (November, 1940), 91–96.

Compares the progress of two groups of pupils who were the beneficiaries of a reading readiness program with pupils who did not receive such help.

84. Robinson, Francis P. "'Speed *versus* Comprehension in Reading'—A Discussion," *Journal of Educational Psychology*, XXXI (October, 1940), 554–60.

Presents an analysis and criticism of previously published conclusions of M. A. Tinker to the effect that the relation between speed and comprehension is greatest in reading material very easy to comprehend. A reply by Dr. Tinker follows the article.

85. Roslow, Sydney. "Reading Readiness and Reading Achievement in First Grade," *Journal of Experimental Education,* IX (December, 1940), 154–59.

Presents evidence secured from 109 first-grade children concerning the relation of scores on intelligence and reading readiness tests and achievement in reading at the end of the first grade.

86. Russell, David H. "Reading Preferences of Younger Adolescents in Saskatchewan," *English Journal,* XXX (February, 1941), 131–36.

Summarizes the results of a study of the book, magazine, and newspaper reading interests of about 300 ninth- and tenth-grade pupils.

87. Sanderson, Marion. "An Experiment in the Development of Meaning Vocabularies," *Studies and Summaries,* pp. 31–35. Manitowoc, Wisconsin: Manitowoc Public Schools, Prepared by Hugh S. Bonar, 1941.

Presents the results of an experiment with fifth-grade pupils ranging in I.Q. from 77 to 121 to determine the effect, as measured by a vocabulary power test, of direct instruction on selected lists of words.

88. Schmidt, Bernardine G. "Auditory Stimuli in the Improvement of Reading," *Elementary English Review,* XVIII (April, 1941), 149–54.

Analyzes the results of tests given to identify pupils for whom "auditory presentations of visual reading materials" were more effective than "purely visual presentations of the same material" and reports the effect of the use of methods in teaching them reading that employed auditory stimuli.

89. Schonell, Fred J. "The Relation of Reading Disability to Handedness and Certain Ocular Factors," *British Journal of Educational Psychology,* X (November, 1940), 227–37; XI (February, 1941), 20–27.

Presents the results of an elaborate study based upon test records from 104 backward readers varying in chronological age from 7+ to 13+ and in I.Q. from 70–79 to 130–39.

90. Scully, James H., and Mahoney, Harold J. "A Study of Reading Ability in CCC Camps," *Education,* LXI (October, 1940), 101–7.

Reports findings based on objective data secured from enrollees in a Massachusetts and a Connecticut camp.

91. Seay, Maurice F., and Clark, Harold F. "Criteria for Use in the Preparation and Evaluation of Reading Materials," *The School Curriculum and Economic Improvement,* pp. 68–78. Bulletin of the Bureau of School Service, Vol. XIII, No. 1. Lexington, Kentucky: College of Education, University of Kentucky, 1940.

Summarizes criteria for use in the preparation and evaluation of reading materials, as supported by the results of scientific studies and expert opinion.

92. Sloane, Albert E., M. D. "Massachusetts Vision Test," *Archives of Ophthalmology,* XXIV (November, 1940), 924–39.

Emphasizes the fact that present methods of identifying pupils in need of thorough visual examination are inadequate and describes the character and organization of an experimentally developed screening test.

93. Smith, Dora V. *Evaluating Instruction in English in the Elementary Schools of New York.* A Report of the Regents' Inquiry into the Character and Cost of Public Education in New York State. Eighth Research Bulletin of The National Conference on Research in English. Chicago: Scott, Foresman & Co., 1941. Pp. 96.

Presents findings and conclusions of a survey of English at all levels as part of the general study of elementary education in New York State.

94. Spache, George. "Characteristic Errors of Good and Poor Spellers." *Journal of Educational Research,* XXXIV (November, 1940), 182–89.

Presents an analysis of the errors of 25 average and 25 poor spellers in Grades III to V which shows close correspondence between problems in teaching spelling, and basic habits of word recognition.

95. Spache, George. "Problems in Primary Book Selection," *Elementary English Review,* XVIII (January, February, April, and May, 1941), 5–12; 52–59; 139–48; 154; 175–81.

Presents standards for use in the selection of preprimers, primers, first and second readers; also the results of word counts to aid in selecting supplementary preprimers and primers.

96. Spache, George. "A Correction in the Administration and Norms of the Monroe Reading Aptitude Tests," *Elementary School Journal,* XLI (February, 1941), 454–58.

Analyzes data from three schools to determine if "errors in the standardization of the battery may have invalidated certain of its norms."

97. Stewart, May L. "Sentence Lengths in Reading," *Elementary School Journal,* XLI (October, 1940), 130–33.

Reports the average and median number of words in sentences and number of words in longest and shortest sentences in seven series of textbooks in reading.

98. Stone, Clarence R. "The Vocabularies of Twenty Preprimers," *Elementary School Journal,* XLI (February, 1941), 423–29.

Analyzes the vocabularies of twenty preprimers; identifies the 100 words most frequently used; compares the use of these words in the different preprimers.

99. Teller, James D. "Improving Ability To Interpret Educational Data," *Educational Research Bulletin,* XIX (September 25, 1940), 363–71, 390.

Compares the progress of a group of college and graduate students receiving specific training in the interpretation of historical data with that of a group receiving conventional training.

100. Thompson, Ronald B. *The Administration of a Program of Diagnosis and Remedial Instruction in Arithmetic, Reading, and Language Usage in Secondary School.* Lincoln, Nebraska: Graduate College, University of Nebraska, 1940.

Presents evidence relative to the value of the program and suggests answers to specific questions relating to diagnostic and remedial teaching in high schools.

101. Thorndike, Robert L. *Children's Reading Interests.* New York: Teachers College, Columbia University, 1941. Pp. vi + 48.

Presents the results of a study of reading interests among children in Grades IV to XII inclusive through the use of a questionnaire relating to fictitious titles.

102. Tinker, Miles A. "Dr. Robinson on Speed versus Comprehension in Reading: A Discussion," *Journal of Educational Psychology,* XXXI (October, 1940), 559–60.

Analyzes Robinson's criticisms of Tinker's discussion of the relationship between speed and comprehension to determine if they are based on misinterpretation or divergence in viewpoints.

103. Tinker, Miles A., Hackner, Florence, and Wesley, Marion W. "Speed and Quality of Association as a Measure of Vocabulary Knowledge," *Journal of Educational Psychology,* XXXI (November, 1940), 575–82.

Reports the results of experiments among college students to determine the relationship between: "(1) speed of association and vocabulary knowledge, and (2) quality of association and vocabulary knowledge."

104. Tinker, Miles A., and Paterson, Donald G. "Eye Movements in Reading a Modern Type Face and Old English," *American Journal of Psychology,* LIV (January, 1941), 113–15.

Presents data from 20 college students secured while reading 10 paragraphs from the Chapman-Cook Speed of Reading Test.

105. Traxler, Arthur E., with the assistance of Margaret Seder and the Educational Records Bureau Staff. *Ten Years of Research in Reading.* Educational Records Bulletin No. 32. New York: Educational Records Bureau, 1941. Pp. vi + 196.

Presents an annotated bibliography and a brief summary of the findings of 618 scientific studies of reading published between January 1, 1930 and January 1, 1940.

106. Walker, Robert Y., and Molish, Herman. "The Relationship between Factors of Ocular Efficiency and Eye-Movement Measures at the College Level," *Journal of Educational Psychology,* XXXII (February, 1941), 145–50.

Compares the ophthalm-o-graph records of 96 college students with various factors of ocular efficiency as measured by the Betts Telebinoculars.

107. Waples, Douglas, Berelson, Bernard, and Bradshaw, Franklyn R. *What Reading Does to People.* Chicago: University of Chicago Press, 1940. Pp. xii+222.

Presents the results of an extensive survey of scientific literature relating to reading to determine the effect of reading on individuals.

108. Williams, Alice Marietta. *Children's Choices in Science Books.* Child Development Monographs, No. 27. New York: Teachers College, Columbia University, 1939. Pp. xiv + 164.

Analyzes the characteristics of books—format, illustrations, subject matter, method of treatment, reading difficulty and style—that cause pupils to read the book, like it, and derive benefit from it.

109. Wilson, Frank T. "Reading Interests of Young Children," *Journal of Genetic Psychology,* LVIII (June, 1941), 363–89.

Summarizes 152 reports from parents concerning the reading interests of kindergarten, first and second grade pupils in the Model School of Hunter College, New York City.

110. Witty, Paul A. "Practices in Corrective Reading in Colleges and Universities," *School and Society,* LII (November 30, 1940), 564–68.

Summarizes responses from 131 universities, colleges, and normal schools to questionnaires which aimed to ascertain the nature and scope of diagnostic and remedial work for poor readers.

111. Witzeman, B. Evangeline. "An Experimental Study Using the Ophthalm-o-graph and Metron-o-scope in the Diagnosis and Treatment of Reading Defects," *Journal of Psychology,* XI (April, 1941), 307–34.

Describes a series of experiments involving 400 high-school pupils to determine the effectiveness of the Ophthalm-o-graph and the Metron-o-scope in diagnosing and treating reading defects.

112. Wolfe, Lillian S. "Differential Factors in Specific Reading Disability," *Pedagogical Seminary and Journal of Genetic Psychology,* LVIII (March, 1941), 45–70.

Compares the responses of two groups of nine-year-old boys, one retarded and the other average in reading achievement, on tests of eye and hand dominance, auditory and visual functions, fluency of verbal associations, and personal adjustment.

113. Worcester, D. A. "The Influence of Orthoptic Training on the Reading Ability of College Freshmen," *Journal of Experimental Education,* IX (December, 1940), 167–74.

Reports the results of experiments to determine the value of training among poor readers through the use of the squint corrector, the binocular synchronizer, and the stereoscope.

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REMEDIAL ARITHMETIC AFTER TWO YEARS

EATON O. BEMIS and WM. CLARK TROW

Editor's note: Much very worthwhile research has been done in the area of educational diagnosis. The authors present data to show that some pupils profit and some do not in the follow-up study.

A COMMON method of overcoming some of the weaknesses of mass education is to provide remedial instruction for pupils who are definitely below the average level and who do not seem to be making progress. There are two opposed views as to the effectiveness of such remedial work: some hold that it brings the pupils—at least those who are sufficiently intelligent—up to a level of accomplishment which will enable them to continue with their group; others believe that pupils can proceed only at the rate of their own individual growth no matter what pedagogical pressure is employed. The latter view, of course, assumes that the environment provides the opportunity for this growth, and that the individual organisms are motivated to satisfy their needs from the environmental supply.

The effectiveness of remedial instruction whether in reading, arithmetic, or other school subjects, can be determined only by longitudinal studies of pupil progress under typical school conditions. To make such a study the following procedure was adopted. The schedule was so shifted that a group of 18 pupils in a twelve-teacher elementary school in an industrial community were placed in a remedial class in arithmetic. These 18 were chosen from a group of 35 who had been designated by their teachers as needing remedial work. The 35 were given the Dearborn Diagnostic Test, Form A, in January, 1937. From the results the teacher who was to give the remedial instruction selected those pupils who were most retarded, and yet were high enough in intelligence as measured by the Otis Quick Scoring Test in Mental Ability to make a successful outcome seem tentatively probable. Of these, 18 were in Grade 6A, and were therefore going on to the junior high school at the end of the semester; so it was decided to confine the remedial work to them. They were taught arithmetic computation exclusively by an experienced teacher, and at the end of the semester (June, 1937) they were again given the Dearborn Diagnostic Test, Form B being used.

The atmosphere of the class and the motivation were excellent. The pupils did not feel it was a "dumb bell" class; rather, since they were soon going on to the junior high school, they were being given an opportunity

to find out their weaknesses and correct them. Each pupil was considered throughout as an individual; his defects in unit skills were located and the remedies applied.

For the total group, the normal grade-level score at the beginning of the second semester, when the instruction began, should have been 6–5[1] and at the end 7–0. Actually, the average grade-level score at the beginning of the semester was 5–4 and at the end was 6–3. Though there was an average gain of nine months instead of a normal gain of five for the five months of instruction, the group was still below the average level for the beginning of the semester. While these results were in the right direction, they did not furnish overwhelming evidence in favor of the program in spite of both the pupil and teacher enthusiasm. An analysis of what happened in individual cases did not remove the uncertainty. While some pupils had made exceptional progress, others had not done so well. Table I shows

TABLE 1

GAIN IN ARITHMETIC COMPUTATION FOLLOWING REMEDIAL INSTRUCTION

Gain in Months	Frequency	Average I. Q.
5– 9	7	93. 3
10–14	4	90. 0
15–19	1	92. 0

the varying amounts of progress made by the group as measured by the two forms of the Dearborn Test before and immediately after the special instructional period. The average Gamma (Otis) I.Q. for each interval reveals no trend in favor of the brighter pupils. It is interesting that no pupils gained less than five months for the five-month period.

Viewing the results in another way, at the close of the period of instruction, although all the pupils made better than normal gain none was up to or above the norm for the grade (7.0); 6 were still at least six months below, one of these being a year below.

These figures, however, do not answer the question of permanence of improvement. In order properly to evaluate the later progress of those who

[1] Grade level score 6–5 means 5 months above the norm for grade 6; 5–4 means 4 months above the norm for grade 5, etc. Results are calculated on the basis of a ten-month year.

had received the remedial training, it was compared over an additional two-year period with that of a control group made up of pupils who had had the same amount of instruction in arithmetic but no remedial work. Pupils in the two groups were paired on the basis of age, I.Q. (Otis), and amount of retardation. The maximum differences in the pairings were as follows: C. A., two months; I.Q., five points; retardation difference, five months. Five of the experimental pupils could not be paired this closely, and another moved from the community, reducing the experimental group from 18 to 12.

The average differences in arithmetic scores (Stanford Achievement Test) in the experimental and control groups as they appeared on the regular September 1937 and 1939 testings are shown in the accompanying tables. Both groups were broken down into low, average, and higher intelligence[1] to discover at which level the pupils studied profited most from the remedial instruction in arithmetic computation. Table II presents

TABLE II

GRADE LEVEL SCORES FOR EXPERIMENTAL AND CONTROL GROUPS ON THE STANFORD ACHIEVEMENT TEST IN ARITHMETIC COMPUTATION

I. Q. Grouping	Experimental Group		Control Group		Months Gain in Grade Level		
	1937	1939	1937	1939	Exper'l Group	Control Group	Difference
80–89	5–0	7–6	4–7	7–0	26	23	3
90–99	4–9	9–2	5–5	8–9	43	34	9
100–109	5–1	9–0	5–9	9–4	39	41	—2
Average	5–0.3	9–9.6	5–1.3	8–5.4	39.3	34.1	5.2

the results in the arithmetic computation section of the test and shows a total gain for the remedial pupils over the control pupils of a trifle over five months, or one semester at the end of two years. Considerable variation is found at the different intelligence levels with four higher level pupils who had the remedial instruction gaining slightly less than the controls.

Although no instruction in arithmetic reasoning was given the remedial (experimental) group, the changes are of some interest. They are shown

[1] The number of pupils at each of the three intelligence levels for both groups was as follows:
I.Q.'s 80–89 Experimental 5, Control 7.
I.Q.'s 90–99 Experimental 3, Control 5.
I.Q.'s 100–109 Experimental 4, Control 10.

TABLE III

GRADE LEVEL SCORES FOR EXPERIMENTAL AND CONTROL GROUPS ON THE STANFORD ACHIEVEMENT TEST IN ARITHMETIC REASONING

I. Q. Grouping	Experimental Group		Control Group		Months Gain in Grade Level		
	1937	1939	1937	1939	Exper'l Group	Control Group	Difference
80– 89	5–1	6–1	4–4	5–9	10	15	—5
90– 99	5–5	7–6	6–5	7–0	21	5	16
100–109	4–7	6–9	6–1	7–7	22	16	6
Average	5–1	6–7.3	5–6	7–0.2	16.3	14.2	2.1

in Table III, where a total gain of two months over the controls in the two-year period is shown. With this slight difference and considerable irregularity in the three intelligence levels, the lowest experimental group even gaining less than its controls, there is little evidence of the spread of training to the reasoning processes. Considerable gain at the mid-level of intelligence is offset by the other two.

In the tables the composite scores tend to obscure what has happened in individual cases. Figures 1, 2, and 3 present sample progress curves of individual pupils, each one in the experimental group paired with his control. The scores are those made in September, 1937, 1938, and 1939 on the Stanford Achievement Tests reported in grade-level units on the basis of a ten-month school year. The small circles indicate the norms. The short solid line at the left shows the score of the experimental pupil on the Dearborn Diagnostic Test at the beginning and end of the one semester of remedial instruction.

In Graph A (Figure 1) the pupils draw apart but make the same final score in computation; while in reasoning both make consistent progress but the experimental pupil maintains his one-grade level. Graph B shows a progressive superiority for the experimental pupil in arithmetic computation, and retrogression in reasoning. The experimental pupil in Graph C shows similar retrogression in computation and approximately equal growth with the control in reasoning. For none of these pupils does the line representing the scores on the Dearborn Test at the beginning and end of the semester of remedial instruction seem to bear any very direct relation to the scores made on the Stanford Achievement Test.

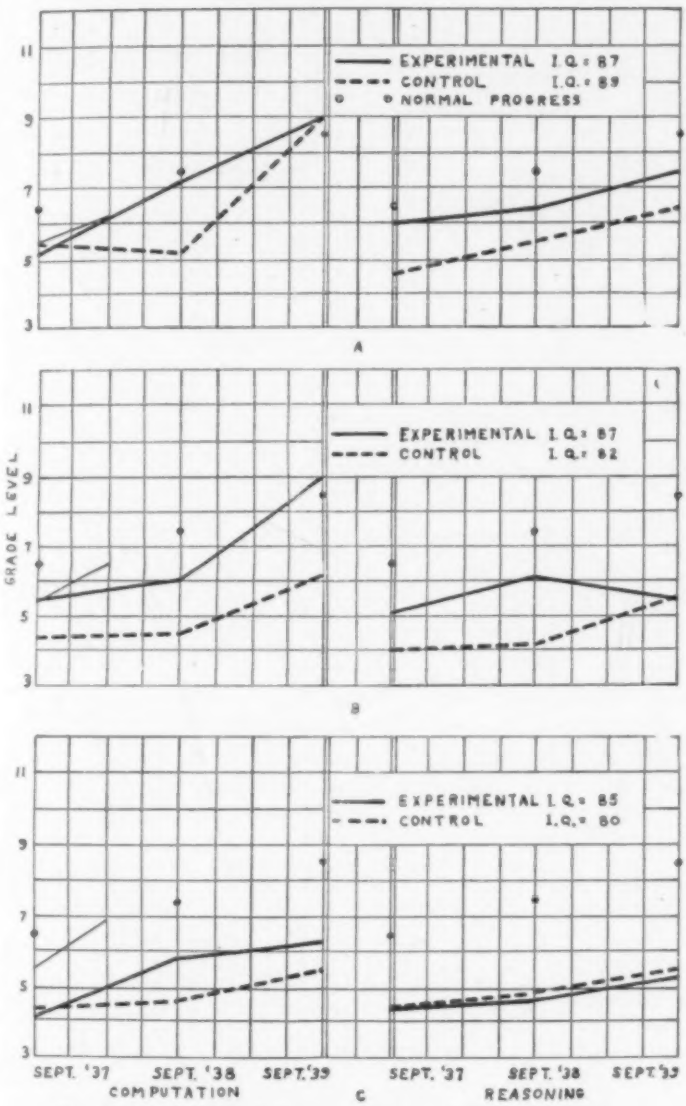

FIGURE 1—Individual Progress Curves of Low Intelligence Experimental and Control Pupils in Arithemetic Computation and Arithmetic Reasoning.

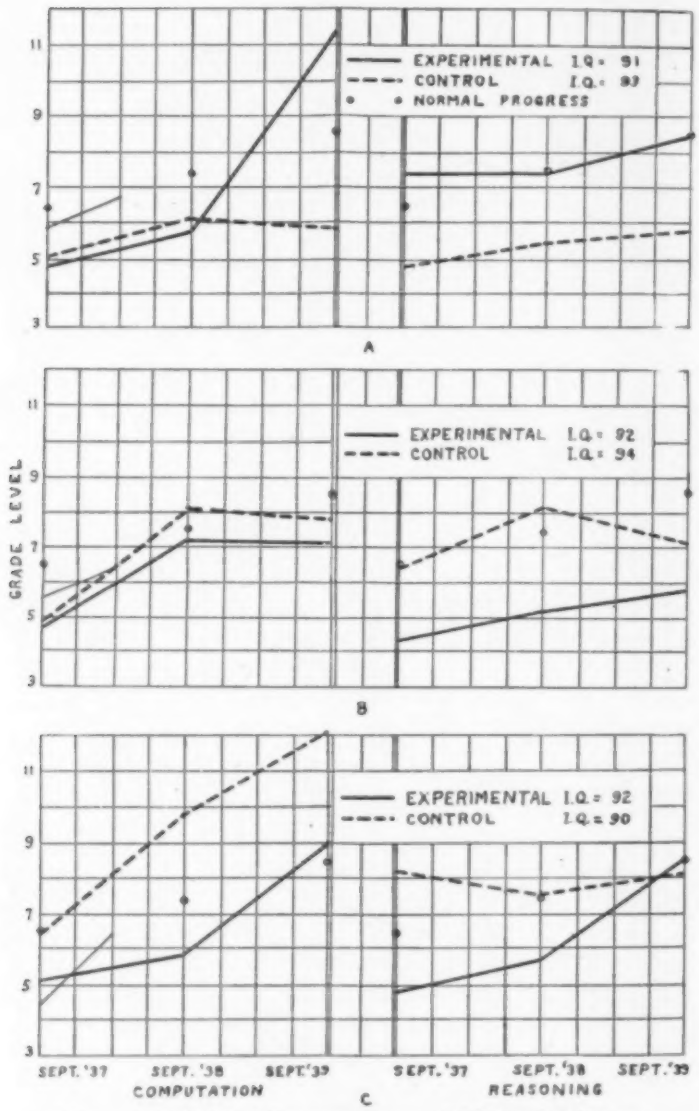

FIGURE 2—Individual Progress Curves of Middle Intelligence Level Pupils in Arithmetic Computation and Arithmetic Reasoning.

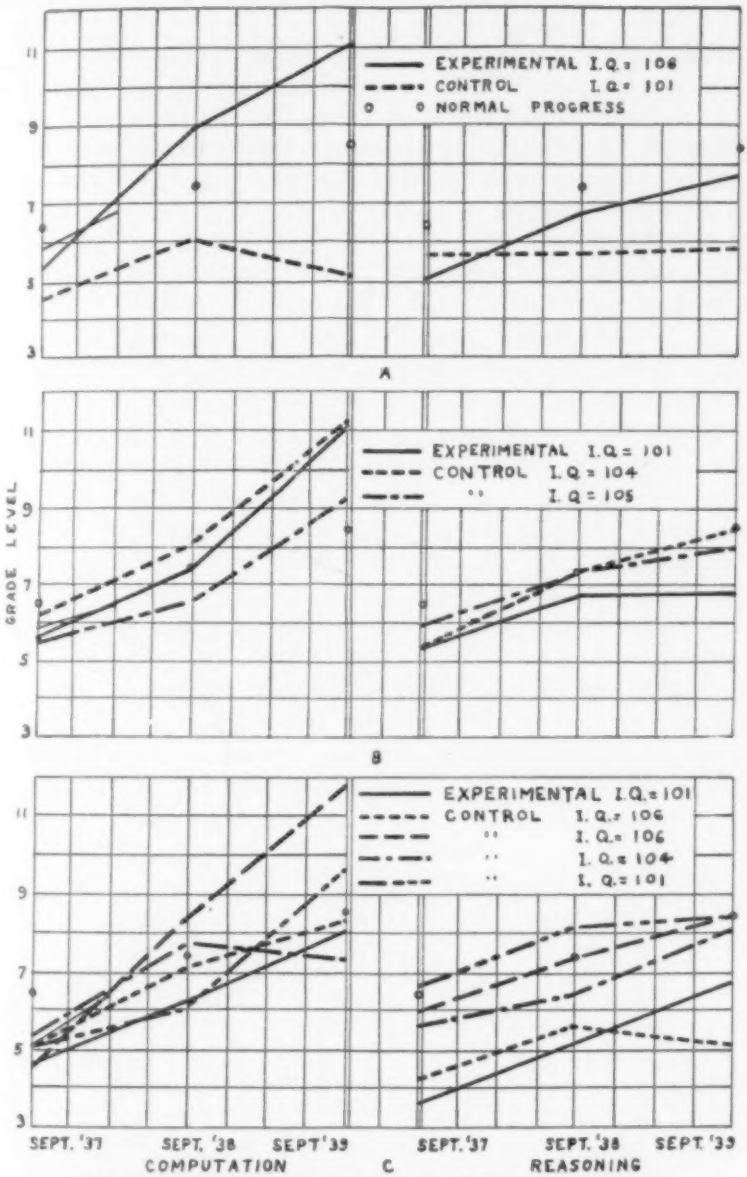

FIGURE 3—Individual Progress Curves of Higher Intelligence Level Pupils in Arithmetic Computation and Arithmetic Reasoning.

Figure 2 presents graphs for sample pairings at the 90–99 I.Q. level of intelligence. Graph A shows a tremendous gain in computation score for the experimental pupil, not only over the paired control pupil but also from the standpoint of normal expectations. In reasoning he maintained his initial advantage. Both pupils in Graph B showed some retardation after the rapid acceleration of the first year but the control remained in the lead in both columns. In arithmetic computation in Graph C the control shows definite superiority over the experimental pupil, but is losing ground in reasoning.

Figure 3 includes the records of some experimental pupils who were paired with more than one control, all at the 100–109 I.Q. level. Graph A in this Figure is similar to Graph A in Figure 2, showing extremely rapid growth for the experimental pupil in computational arithmetic and relatively normal development in reasoning. Graph B shows one control pupil matching the exceptional growth in arithmetic computation of the experimental pupil, and the other though inferior still making remarkable progress. In arithmetic reasoning, though, the experimental pupil is inferior to both controls. In Graph C, the experimental pupil can fairly be said to be inferior to at least three of the four controls in computation and in reasoning.

Another method of comparing achievements in arithmetic computation based on the number of pupils showing normal growth or better over the two-year period is presented in Table IV. On this basis approximately 82% of the experimental pupils made normal growth or better as compared with

TABLE IV

COMPARISON OF THE GROWTH OF EXPERIMENTAL AND CONTROL GROUPS WITH ALL SIXTH GRADE PUPILS

	Number* Normal Growth or Above	Number Below Normal Growth	% Normal Growth or Above	% Below Normal Growth
Experimental Pupils	14	3	82.4	17.6
Control Pupils	13	6	68.4	31.6
All 6A Pupils (Incl. Experimentals)	40	9	81.6	18.4
6A Pupils (Excl. Exp.)	26	6	81.3	18.7
6B Pupils	56	7	88.8	11.2
6A and 6B (Incl. Exp.)	96	16	85.7	14.3
6A and 6B (Excl. Exp.)	82	13	88.3	13.7

* 20 months or more.

68% of the controls, 81% of all 6A pupils, and 86% of all 6 A and 6B pupils in the school system. Conversely, 18% of the experimentals and 32% of the controls failed to make normal growth. The 18% of failures for the experimentals compares very favorably with 19% of failures in the rest of the 6A grade and with 14% of failures in grades 6A and 6B. Proportionally, then, there was nearly twice as high percent of failure among the paired control pupils as among the experimentals. This tends to show on the basis of numbers that one semester of remedial work enabled as large a percent of retarded pupils to make normal progress or better druing the two-year period as did all the pupils in the same grade in the school system. Furthermore, a definitely larger percent of pupils who had had remedial instruction for one semester did normal work or better during the two-year period than did paired control pupils who had not had the remedial instruction. The actual number of pupils involved, however, is small.

From this study it appears that remedial work was of value to certain pupils and of little or no value to others when comparison with the progress of paired controls is used as a criterion. On a percentage basis it appears that a slightly larger proportion of retarded pupils, with remedial instruction, did normal work or better than of the control pupils paired with them. One semester of remedial work brought the same proportion of retarded pupils up to normal progress or better as was found in the grades as a whole, though remedial work in computation had little if any measurable effect on scores in arithmetical reasoning. The possible beneficial aspects in terms of mental hygiene are not shown though they were reported in all instances. In the few cases studied, the pupils with average intelligence benefited slightly more from remedial work than did those of lower and higher intelligence levels. There are not enough cases at any of the three levels to indicate statistically the reliability of the differences found.

The lack of uniformity in improvement following remedial instruction, as well as the growth in certain cases without it, assuming reliability in the tests used, suggests that the usual methods of measurement employed on a mass basis are unsatisfactory. It is probable that the retarded pupils studied, or any others, could be divided into three categories: (1) those whose development is beginning to accelerate. These would show improve-

ment with or without remedial instruction. (2) Those whose development is slow, with the possibility of a later acceleration. These would not profit by any special instruction. (3) Those whose development had progressed above their achievement, but who for one reason or another—absence from school, lack of adjustment, unfavorable attitude, etc.—have not acquired certain needed instrumental skills. These would profit by remedial work. But the pupils in the third category cannot be distinguished from those in the other two by the usual testing procedure. A record of continuous physiological and psychological growth over a period of years might pick them out. Even the fatalistic view of pupil development thus offers a program for research and for remedial instruction, but not on the wholesale basis commonly employed.

A STUDY OF PREFIXES IN THE THORNDIKE LIST TO ESTABLISH A LIST OF PREFIXES THAT SHOULD BE TAUGHT IN THE ELEMENTARY SCHOOL*

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Editor's note: The studies of vocabulary and the preparation of word lists have brought field workers important new tools by which the effectiveness of their efforts may be increased. The author makes a significant contribution to this literature.

PURPOSE OF STUDY

THE machinery of word formation by use of prefixes is a definite part of our language. New words are formed by their use, and words already formed may be more readily interpreted through a knowledge of their usage.

Interest in the improvement of vocabulary instruction is evidenced by its emphasis among educators within recent years and by the demands for help made by the class room teacher. However, the problem that confronts the busy teacher is how to determine the number and the relative importance of the different prefixes.

These considerations in a recent seminar** discussion led to the question, "How many prefixes are there in the Thorndike rating*** of 20,000 words, and what are their frequency of occurrence?" Therefore, to aid the class room teacher and serve as a basis for further investigation, this study of prefixes was made.

RELATED MATERIALS

Osburn,[1] in his suggestions concerning vocabulary building, recommends attention to prefixes. He has made available a guide to the relative value of prefixes in the 10,000 words of the Thorndike Word Book. This list

* A limited number of copies of this article may be obtained through the Reading Clinic, Pennsylvania State College, State College, Pennsylvania, at a cost of ten cents per copy.

** A seminar discussion under Dr. E. A. Betts, Research Professor in Elementary Education, Pennsylvania State College, State College, Pa.

*** A Teacher's Word Book of the Twenty Thousand Words Found Most Frequently and Widely in General Reading for Children and Young People, prepared by Edward L. Thorndike, Professor of Education, Teachers College, Columbia University.

[1] Osburn, W. L. *Remedial and Follow-up Work*. Bloomington, Ill: Public School Publishing Co., 1925.

includes only the prefixes used with the Anglo-Saxon and other common words. It lists only those prefixes that occur five times or more in the Thorndike Word Book.

Thorndike[2] points out that the possible advantages of more direct ways of attacking words to develop meaning include brevity, system in general, systematic gradation in particular, efficiency and application. The small, known words will not need to be reread to reach the new words; any useful system of word grouping to increase ability to read may be applied; the meanings may be graded according to any appropriate scale; the most important meanings can be emphasized; and the knowledge may be applied by using the words. Durrell and Sullivan[3] assume: "A child who has had his attention called to certain roots and prefixes and who later notices these elements in a new study will probably recognize the words at sight more readily than if he had had no such training." The value of instruction in visual and auditory discrimination of prefixes has not yet been experimentally determined but it would be desirable to verify this assumption.

THE PROCEDURE USED

A list of sixty-one different basic forms of prefixes was used to make this study of the Teacher's Word Book of 20,000 Words.[4] The various assimilated forms of prefixes were included under each different basic form. The term assimilated is used here to refer to prefixes that have the same meanings as the basic form but are spelled differently. For example, the basic form *ab* as in *abstract*, has the different assimilated forms *a* as in *apart* and *abs* as in *abscess*. The prefixes were arranged alphabetically and then checked against the Thorndike rating. Each word with a prefix was classified according to the basic form of the prefix and grouped so as to conform with its rating in the Thorndike list. The words were checked in Webster's New International Dictionary[5] to determine the validity of the prefix.

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[2] Thorndike, Ed. L. "Improving the Ability to Read," *Teachers College Record*, XXXVI (October, November, December, 1934), 1–19, 123–144, 229–241.

[3] Durrell, D. D. and Sullivan, H. B. "Vocabulary Instruction in the Intermediate Grades," *Elementary English Review*, XV (April and May, 1938).

[4] Thorndike, Ed. L. *The Teacher's Word Book of 20,000 Words*. New York City: Teachers College, Columbia University, 1932.

[5] *Webster's New International Dictionary*. Springfield, Mass.: G. & C. Merriam Co., 1928.

RESULTS

The results show that 4922, or 24%, of the words in the Teacher's Word Book of 20,000 words have prefixes. The number of words with prefixes appearing under the different basic forms varied from one to five hundred. Fifteen prefixes appearing most frequently account for 82% of the total number of prefixes. This list of fifteen, together with the number of times each appeared in the Thorndike rating, is as follows:

Prefix	Frequency
ab (from)	98
ad (to)	433
be (by)	111
com (with)	500
de (from)	282
dis (apart)	299
en (in)	182
ex (out)	286
in (into)	336
in (not)	317
pre (before)	127
pro (in front of)	146
re (back)	457
sub (under)	112
un (not)	378

Each one of these fifteen prefixes has its number well scattered over the Thorndike list with no clustering at any one level.

The following Table I furnishes a means of recognizing the more important prefixes and shows how many times each prefix occurs and its Thorndike rating. The prefix *ad* appears a total of 433 times, thirty of these being in the eleventh thousand rating in the Word Book.

The total number of prefixes used to make this study are arranged alphabetically in Table II. In addition to the prefixes listed, assimilated forms are noted, a common meaning is given for each prefix and an illustrative word. Some of the prefixes have more than one meaning, as *para* = alongside of, beyond, against, amiss.

LIMITATIONS

One of the limitations of this study is the fact that the Webster's New International Dictionary, copyrighted in 1928, was used to determine the validity of a prefix. Another limiting factor was the need to set up a distinction between compound words, as the combining form *over* in overthrow, and words with prefixes.

TABLE I

THE THORNDIKE RATING AND THE FREQUENCY OF OCCURRENCE OF THE FIFTEEN MOST COMMON PREFIXES

prefix	ab	ad	be	com	de	dis	en	ex	in	in	pre	pro	re	sub	un	total
Thorndike rating																
1a	1	3	7	1	0	0	0	0	0	0	1	0	3	0	1	17
1b	1	7	3	6	4	6	2	4	3	0	1	0	3	4	0	44
2a	1	11	4	10	6	3	1	6	4	1	5	4	10	3	1	70
2b	2	17	2	10	6	3	3	8	5	1	1	2	5	0	3	68
3a	1	9	0	8	9	8	6	4	9	5	1	8	16	4	0	88
3b	3	20	5	22	6	10	3	3	5	3	2	4	22	3	2	113
4a	2	11	3	17	7	6	5	9	9	4	2	5	9	4	2	95
4b	2	10	2	17	5	7	3	8	10	4	0	3	15	1	4	91
5a	2	17	2	11	9	10	6	7	10	2	1	9	13	2	6	107
5b	3	24	3	14	7	7	7	10	12	1	2	3	13	6	8	120
6	4	21	5	25	13	5	14	9	14	10	6	6	16	5	12	165
7	6	30	8	33	23	16	12	17	26	15	12	11	36	6	8	259
8	6	30	6	39	16	11	9	26	25	14	11	7	20	12	21	253
9	7	20	5	39	13	24	17	20	24	31	9	9	27	6	14	265
10	1	23	4	23	23	24	10	14	21	16	13	4	17	4	21	218
11	4	30	5	21	19	21	10	14	11	21	4	8	30	5	32	235
12	4	23	6	27	13	24	7	11	15	24	6	5	20	7	26	218
13	3	8	5	27	15	16	7	18	19	20	2	4	28	4	36	212
14	6	23	5	24	11	17	6	11	23	23	7	4	22	5	20	212
15	7	23	7	26	22	13	8	19	27	45	11	12	26	5	36	287
16	8	24	4	26	19	24	16	16	20	25	9	11	17	10	35	264
17	2	17	2	9	10	11	12	11	12	10	8	8	29	4	16	161
18	4	10	0	24	11	14	7	8	9	12	2	7	14	5	22	149
19	1	6	6	12	5	5	6	17	11	17	3	6	18	3	30	146
20	2	16	12	29	10	12	5	16	7	13	8	6	24	4	22	186
Total-----	83	433	111	500	282	297	182	286	336	317	127	146	453	112	378	4043

CONCLUSIONS

The knowledge of the number of prefixes and their frequency of occurrence in the Thorndike rating should be of some value to teachers of reading, spelling, and language. This study points to the conclusion that a mastery over prefixes is essential for meeting the language needs of all students. A pupil reading a book with a vocabulary range equivalent to the fifteenth thousand rating in the Thorndike list would need practically the same knowledge of prefixes as if the book's range in vocabulary were limited to the first few thousands in the Thorndike rating. Furthermore, these numbers can give the busy teachers a clue as to which prefixes to teach in order that they may use their time most effectively.

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TABLE II

THE NUMBER OF PREFIXES USED IN THIS STUDY, ASSIMILATED FORMS, COMMON MEANINGS AND ILLUSTRATIVE WORDS

Prefix	Assimilated Forms	Common Meanings	Illustrative Words
a	an-,	on, in, at	abed
ab	a-, abs-,	from	abstract
ad	a-, ac-, af-, etc.	to	admit
ambi	amb-,	about, around	ambiguous
amphi	--------	both	amphibian
an	a-,	not	anarch
ana	--------	up	anatomy
ante	ant-,	before	antedote
anti	ant-,	against	antitoxin
apo	aph-,	away from	apostasy
archi	arch-,	chief	architect
be	--------	about, by	beguile
bene	--------	well	benefactor
bi	bis-,	apart, two	bicycle
cata	cat-, cath-,	down	catalog
circum	--------	around	circumference
com	co-, col-, con-, cor-,	with, together	commemorate
contra	counter-,	against	contradict
de	--------	from	deduce
di	--------	twice	dilemma
dia	di-,	through	diagnose
dis	di-, dif-, dir-,	apart	dismiss
dys	--------	ill, hard	dysentery
ec	--------	out of	eccentric
en	em-,	in, into	enchant
enter*	--------	to go into, among	enterprise
epi	--------	on, upon	epigram
equi	--------	equally	equidistant
ex	e-, ef-, es-,	from, out of	exaggerate
extra	--------	beyond	extraordinary
for**	--------	away, off	forbid
fore	--------	before	forearm
hemi	--------	half	hemisphere
hyper	--------	over, above	hyperbole
hypo	--------	less, under	hypothenuse
in	il-, im-, ir-,	in, into	incarnate
in	i-, il-, m-, ir-,	not	inactive
inter	intra-, intro-,	among, within	intercede
meta	--------	between, after	metamorphosis
mis	--------	amiss, wrong	misconstrue
multi	--------	much, many	multiform
non	--------	not	nonchalant
ob	oc-, of-, og-, op-,	before, against	obstacle
off	--------	away, apart	offset
para	--------	alongside of, beyond, against, amiss	paraphrase
per	--------	through, through-out	percolate
peri	--------	around, about	periphery
poly	--------	many	polysyllable
post	--------	behind, after	postscript
pre	--------	before, infront	precede
pro	--------	in front of, forward	proceed
re	red-,	back	reassure
retro	--------	backward	retrospect
se	--------	aside	secede
semi	--------	half, partly	semicircle
sub	suc-, suf-, sug-, sup-, sur-, sus-,	under	subsoil
super	sur-,	above, over	superhuman
syn	syl-, syn-,	with, together	syncopate
trans	tra-, tran-, tres-,	over, across	transatlantic
tri	--------	three	triangle
un	--------	not	unaided

* Most derivatives of **enter-** are obsolete. The prefix has been supplanted in making new words by **inter-**.

** This is a prefix that is no longer active in English, but occurs in some living and many obsolete words.

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EDITORIAL

THE NECESSITY OF A CONTINUOUS PROGRAM OF DIAGNOSIS

RECENT research has made it evident that diagnosis should be a continuous process carried on throughout the entire learning activity. This point of view has usually not been the basis of investigations that have been concerned with the analysis of pupil difficulties and the discovery of the causes of failure of some learners to profit from instruction. The pioneer studies in the field of educational diagnosis, for example, those of Buswell in arithmetic, Book in spelling, and Gray in reading, presented the results of studies of errors made and faulty procedures used by pupils on tests that were administered *after* the learning process was considerably advanced or even ostensibly completed. The lists of errors and incorrect responses they reported yielded highly significant information about the effectiveness and nature of the learning process and the adequacy of the instructional program. These studies brought to our attention the need of making investigations much earlier in the learning activity to determine the incidence of these shortcomings and to devise ways of adapting curriculum, methods of instruction, and materials so as to prevent the development of these disabilities and deficiencies.

The readiness testing movement was an important and valuable attack on the problem of improving learning. The significant point about this approach is that the diagnostic studies were made *before* the formal learning of some major ability, such as reading, or a skill, such as learning how to multiply with fractions, was systematically begun. While the earlier studies of readiness were largely concerned with the predictive value of these tests, the point of view has since shifted, so that readiness tests are used to discover the factors in the total personality of the learner that are likely to interfere with subsequent success in learning in a given area. Such elements as physiological defects, lack of mental maturity, meagerness of experiential background, and weakness in basic underlying skills that should already have been mastered are known to be contributory to lack of success in

learning. Unless instruction is modified in the light of the results of these readiness tests, learning difficulties are almost certain to develop. Recently it has been pointed out that this readiness testing program should be a basic element of instruction not only at the level of the primary grades but at all stages of the school whenever work on the development of major ability or skill is about to be begun.

It is also becoming clear that we should extend the concept of diagnosis beyond the limits described above so as to include also the study of learning difficulties that arise *throughout* the whole of the developmental process itself. Diagnosis should not be limited to the beginning stages of work and the testing and analysis that are done after the learning of some skill has been completed. Periodic systematic studies of the activities of the learner should be undertaken regularly while he is progressing in the learning of some ability or skill so that we can discover at as early a time as possible any conditions that are likely to interfere with successful mastery, or evidences that learning is not proceeding smoothly and happily. The lists of faults referred to above are of limited value in this connection since they only reveal conditions that probably existed long after the initial damage was done. This point is borne out by recent researches in arithmetic diagnosis carried out while the pupils were learning a major skill. These studies show that many other kinds of errors are made in the course of the learning activity and other kinds of faulty procedures are used in the early stages that drop out entirely later on and hence do not appear on the lists based on final tests given after learning has been completed. It has also been found that certain kinds of errors persist throughout the learning and continue to persist while other topics are being taken up; others appear apparently due to interferences of various kinds and are quickly eliminated by prompt attention to the matter by the teacher; the kinds of errors made also seem to be directly related to the teaching procedure that is used in presenting the topic. These difficulties can only be discovered by a continuous study of the work of each pupil.

To carry out such a plan of analytical study the most convenient way would be for the teacher to scrutinize the oral and written work of the pupil on his daily assignments to discover any inadvertencies that may appear. Good teachers of course use this plan in their instruction, but unfortunately many of them do so with little insight and not systematically. This

method of attack would be markedly strengthened by the use of a greatly extended series of analytical standardized diagnostic tests paralleling the step by-step development of the work. The teacher would administer these tests at fairly frequent intervals during the learning program to locate conditions that would lead to more or less serious maladjustment if not promptly corrected or checked. The development of such a program of diagnostic tests not only for arithmetic but for all other areas of the curriculum offers rich opportunities for research. The basic elements would be three in number, (1) a series of readiness tests to be administered *before* instruction in some major skill or ability is begun; (2) a series of analytical diagnostic tests to be administered periodically or as needed *in the course* of the learning activity; and (3) a series of cumulative diagnostic tests to be administered *after* the period of instruction has been completed, to survey the total results of the activity so that any weaknesses that persist can be located and corrected. Such a variety of professional tools would make it increasingly likely that diagnosis would become an essential integral element in good teaching. Diagnosis would be a continuous process.

LEO J. BRUECKNER.

REVIEWS

Address all communications relative to book reviews to Editor Kai Jensen, University of Wisconsin, Madison, Wisconsin.

LUNDBERG, GEORGE A. *Social Research: A Study on Methods of Gathering Data.* Second Edition. New York: Longmans, Green and Co., 1942. Pp. xx + 426. $3.25.

TOWLE, CHARLOTTE. *Social Case Records from Psychiatric Clinics: With Discussion Notes.* University Social Service Series. Chicago: University of Chicago Press, 1941. Pp. xii + 455. $3.00.

WILSON, GERTRUDE. *Group Work and Case Work: Their Relationship and Practice.* New York: Family Welfare Association of America, 1941. Pp. v + 107. $.85.

BINGHAM, WALTER VAN DYKE and MOORE, BRUCE VICTOR. *How to Interview.* Third Edition. New York: Harper and Brothers, 1941. Pp. ix + 263. $3.00.

These four books, directed primarily to workers in social sciences other than education, are at the same time important for investigators, practitioners, and students in both education and psychology. *Social Research* draws its documentation almost entirely from sociology. *Social Case Records from Psychiatric Clinics* consists of detailed clinical case records. *Group Work and Case Work* deals with important concepts and interrelationships in the field of social work. *How to Interview* stresses the application of this technique to the areas of employment, counseling, oral examinations, surveys, and case work.

Social Research represents extensive rewriting of the 1929 edition. The investigational techniques with reasonably full treatment are: experimentation, schedules and questionnaires, sociometric scales for measuring attitudes and institutional behavior, indices, and interviewing. Neither the historical nor the case method is given as much as ten pages of space. In view of space limitations and of available treatises, it probably is reasonable to omit consideration of psychological and achievement testing and of the genetic approach, although these techniques have important implications for sociology. *Social Research* may be read with profit by students of educational and psychological research; it could have been made even more useful to workers in both sociology and education by drawing upon the extensive body of educational literature on methods of research.

Social Case Records from Psychiatric Clinics illustrates the use of case work methods in relation to the emotional needs of the patient, as determined by the social, economic, biological, and psychological forces represented in the client's life history. An opening chapter presents the theoretical point of view from which the cases are analyzed. The case records reported involve the follow-

ing illustrative problems: (1) a boy of normal intelligence with no organic basis for his symptoms of facial tic and "nervousness;" (2) a child with a cardiac condition and peculiar eating habits; (3) a self-willed boy of superior intelligence; (4) a mentally defective boy; (5) a girl with no organic basis for certain physical symptoms; (6) a young woman with periods of serious illness, probably associated with frustrated achievement strivings; (7) a boy with a "vicious disposition;" (8) a boy of normal intelligence with no organic basis for certain physical symptoms; (9) a boy with no organic basis for his symptom of enuresis; (10) an adolescent boy hospitalized for osteomyelitis, with a delinquency record; (11) a young woman in an acute anxiety state; and (12) a young woman with acute fears. The records stress the part of the social worker in treatment, especially in relation to the patient, parents, and others. The case records would have been more useful to most readers, if the interpretation that usually accompanies collection of data, diagnosis, treatment, and follow-up had not been so extensively deleted. The deletion was for the purpose of requiring the students in the author's classes to deduce the implications for themselves. This fact probably explains why the records appear to be primarily chronological narratives, with a minimum of summary statements and of synthesis. Also, the sequence of steps in study of symptoms, diagnosis, and treatment might well have been more clearly organized and labeled in the narrative. Useful discussion notes and a bibliography follow each case.

The thesis of *Group Work and Case Work* is to resolve the present difficulty: (1) on the part of group leaders in helping members of groups to find the individualized services of case study and case work necessary for diagnosis and adjustment, and (2) on the part of case workers in assisting clients to locate group experiences essential to remedial or developmental treatment. The problem is essentially one of cooperation between the family, child welfare, medical, and psychiatric case-work fields and the group work of the "Y's," Scouts and Boys Clubs, settlements, and public recreation projects. This means that, for effective cooperation, case workers and group leaders need training in both areas. An index and more numerous topical headings would have rendered the volume more usable for reference purposes.

How to Interview, the standard work on this technique, has gone through two earlier editions, in 1931 and 1934. The first two chapters and the last present general principles of interviewing, with the remainder of the chapters devoted to special areas of application. Interviewing is discussed in relation to: students, vocational counseling, employment, oral examinations, public opinion polls, commercial surveys, case work, mental clinic, journalism, and legal evidence. The appendices and the long annotated bibliography of earlier editions have been omitted, with a comprehensive bibliography covering 1934–41 to be issued separately by the junior author. In view of the extensive use of the volume as a handbook, a number of the chapters might well have included pertinent topical headings, as is done effectively in certain other chapters.

It is repeating a comment that has been made with increasing frequency during recent years to say that research workers and students with specialization in

education, psychology, sociology, or some other social science field may well keep in touch with the pertinent literature of closely related areas of knowledge. This statement applies with especial emphasis to discussions of the methodology of research.

CARTER V. GOOD.
University of Cincinnati

MORRISON, HENRY CLINTON. *The Curriculum of the Common School.* Chicago: The University of Chicago Press, 1940. Pp. xiii + 681. $4.00.

A Program of General Education. In many parts of this country attempts are being made to develop programs of education intended to meet the non-professional and non-specialized needs of all citizens. This program of "general education" as contrasted with "special" or "vocational" education is gradually being extended from the elementary school through the high school into at least the first two years of college. In a highly significant contribution to this problem Professor Morrison presents in detail his views as to what the content of general education should be. He applies the general principles developed in his earlier contributions. He defines education as "nothing else than taking on the arts and sciences and moral attitudes which make up the fabric of civilization." (p. 1) "Learning is adjustment." (p. 2) Instruction is regarded as "the social process by which the community seeks to guarantee that the education of the rising generation shall be right education." (p. 3) The basal framework of instruction is the curriculum. Dr. Morrison states that purpose of the volume is "to ascertain not what the curriculum ought to be but what the curriculum is." (p. 5) He believes that the content of the curriculum is "constituted of the institutions which are good in all advancing societies," namely, "civilized" "progressive" groups and peoples.

Following a discussion of the points outlined above in two chapters the volume includes a series of twelve chapters, each of which deals with a major social institution. The titles of these chapters are language, mathematics, graphics, science, religion, morality and moral institutions, art, the state and civil institutions—civics, civil government — politics, commerce, industry, and health. In each chapter the contents of one of these institutions is discussed and outlined as a series of instructional "units" intended to serve as a guide to curriculum makers and instructors. The chapters on religion, morality and moral institutions, politics, commerce, and industry deal with fields that are least commonly included in the education of many pupils but which Professor Morrison regards as imperatively needed in the education of our young people. The last chapter of the volume deals with such topics as the organization of instruction, continuity, and adaptability of the curriculum.

This volume is undoubtedly one of the most important contributions that has been made to the problem of determining the content of a program of general education. The author has made no attempt to indicate the techniques by which he arrived at the contents of his proposed program. It is evidently a carefully considered statement of the results of many years of thinking about the problem by a major worker in the field of education. It merits the scrutiny and study of all who are concerned with general education.

LEO J. BRUECKNER.
University of Minnesota

TRAXLER, ARTHUR E. (With the assistance of Margaret Seder and others). *Ten Years of Research in Reading.* Educational Records Bulletin. No. 32. New York: Educational Records Bureau, 1941. Pp. vi + 195. $1.25.

This treatise consists of an annotated bibliography and brief summary of the more important studies of reading published during the period January 1, 1930 to January 1, 1940. The major emphasis is upon material "that may be of particular interest to teachers of reading in elementary and secondary schools and colleges, especially those engaged in diagnostic work and remedial and corrective teaching." Certain of the more important books on methods of teaching reading are also included.

The summary and bibliography, organized under nineteen subheadings, are easy to use. In fact, the summary alone will give to teachers a fairly comprehensive idea of progress in reading research during the past ten years.

Perhaps the most noteworthy trend during the 1930–40 decade is the extension of reading research from the laboratory to the classroom. Certain examples (ophthalm-o-graph and the metron-o-scope) cited to illustrate this are not happy choices, however, since the usefulness of these techniques is still seriously questioned. This transfer of techniques, originally developed in the laboratory, to the school situation is desirable since the classroom teacher must necessarily carry the burden of raising the reading level of pupils. It is during this decade also that teachers beyond the elementary school have begun to accept the responsibility for helping students to improve in reading skills.

Frequently it has been difficult for the teacher to gain access to research reports. This difficulty is solved to a certain degree by this annotated bibliography and the well organized summary. The book should be made available to teachers in all schools.

MILES A. TINKER.
University of Minnesota

NIFENECKER, EUGENE A. and LAZAR, MAY. *Individualization of Instruction in Reading.* Educational Research Bulletin of the Bureau of Reference, Research and Statistics. No. 1. New York: Board of Education of the City of New York, 1941. Pp. vi + 42.

Research, clinical practice, and to a lesser degree, school-room practice are pointing toward individualization of instruction as a promising procedure for fostering reading proficiency. In this treatise, sponsored by the New York City Board of Education, a program of individualized instruction in reading is explained in some detail. Included are discussions of the background of individualized instruction, its relation to the school program, supervision and reading program, and the role of guidance in the reading program.

Prevention of reading disability, through adequate provision in the classroom for the instructional needs of the individual pupils, is both possible and highly desirable not only because it is more economical but also in terms of improved student adjustment. No reading program which fails to recognize individual differences can be considered adequate. Unfortunately, although differences in capacity to learn has long been accepted as a basic principle in education, progress in individualized instruction in reading

has made little progress in the schoolroom situation. This has been due partly to lack of development of teaching techniques. In this book the authors have put into practical form an outline of reading instruction that should prove of great value to both the teachers and supervisors.

Questions may be raised concerning certain points in the discussion: (1) Greater emphasis should be given to a proper balance between instruction in basic reading skills and instruction in the specialized skills that are unique to a particular reading situation. (2) The authors fail to emphasize that, after the most adequate grouping of pupils has been made, individualized instruction within that group is necessary. Basically the teaching must be geared to the capacity of the individual child. (3) It is suggested that it might be advantageous for the teacher to keep the same pupils for at least two terms. Perhaps it would be even better to keep them for two years. (4) The use of a folder for each child to aid in pupil appraisal might receive greater stress. (5) Although the need of flexibility in reading habits is mentioned, it is not emphasized. A reader is proficient only to the degree that he is able to adapt his reading to the particular material and to the purpose at hand. For example, a chemistry text and a story should not be read in the same manner.

Every teacher can find much of value in this treatise. Future bulletins, promised by this research group, will be awaited with anticipation.

MILES A. TINKER.
University of Minnesota

GESELL, ARNOLD. ***Wolf Child and Human Child: Being a Narrative Interpretation of the Life History of Kamala, the Wolf Girl.*** New York: Harper and Brothers, 1941. Pp. xvi + 107. $2.00.

The story of Kamala, in India, is almost as incredible as the legends of mythology, but there is documentary and photographic evidence covering the last nine of her estimated seventeen years of life. It was probably near the middle of her first year of life in 1912 that this native child was captured by a female wolf, which presumably served as the foster mother of the infant. In 1920 Kamala, at the age of eight, and another female child of less than two years were rescued from the wolves' den by Reverend Singh and companions. For the next nine years, 1920–1929, until Kamala's death, Reverend Singh kept a diary, with occasional photographs, of the efforts of himself and wife at an orphanage to adjust Kamala to human ways. The younger child died at an early age, in 1921, when less than three years of age.

Gesell presents a moving psychological analysis of the probable developmental stages and adjustments of Kamala while with the wolves and of the long road toward reeducation and learning of human ways in the orphanage, including eating behavior, learning to stand and walk upright, development of speaking vocabulary, wearing of clothing, and social adjustments to human beings. Gesell concludes that Kamala's wild life considerably modified her physique and greatly impeded mental organization, with the result that her intelligence at seventeen, as evidenced by language and social behavior, was similar to that of a child of three and one half years, although

she probably was not mentally deficient or feeble minded. The narrative presents, in a most singular setting, the extremely interdependent relationships of heredity and culture. In the pathos of the story is evidence of the tremendous physical and mental resources available for making almost incredible adjustments, as when Kamala was carried to the den of wolves, years later returned to human society, and then lost the companionship of the younger wolf-child.

So strange a narrative naturally provokes some skepticism; however, Gesell and others are convinced of the authenticity of the documentary and photographic evidence. Gesell looks upon this study as another phase of his interest in the normal aspects of child development, viewing Kamala as a potentially normal child who made adjustments to conditions of extremely abnormal stress.

CARTER V. GOOD.

University of Cincinnati

COOKE, DENNIS HARGRAVE. *Administering the Teaching Personnel.* Chicago: Benjamin H. Sanborn and Co., 1939. Pp. xiv + 348. $2.40.

The problems of administering the many phases of teaching personnel are presented in this volume along with considerable data regarding investigations and studies made in this field. There is a very interesting introductory chapter upon "Considering Teachers as Human Beings." Phases covered include the selection and placing of teachers, consideration of their loads, their salary, and their growth.

The book is written in a very readable style. Contrasting points of view are presented clearly. To the reviewer, the author at times appears to be somewhat dogmatic without always giving reasons for the stand which he takes. There are a good many "Shoulds" in the book. An example of this is as follows:

> "The interne requirement in medicine is to be commended. It should be extended to teaching. After having received his bachelor's degree or its equivalent the teaching candidate should be required to serve as interne or cadet teacher for three years before he is accepted as a full-fledged teacher." (Page 32)

The chapters on the legal aspect of administering the teaching personnel are excellent; that on evaluating teachers and their services is rather complicated. The book should be very helpful to the administrator who is seeking suggestions for the improvement of his teacher personnel.

EARL W. ANDERSON.

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Research Abstracts and Bibliographies

Address all communications relative to research abstracts and bibliographies to A. S. Barr, University of Wisconsin, Madison, Wisconsin.

BULLETINS

NATIONAL CONFERENCE ON RESEARCH IN ENGLISH. *Reading in the Intermediate Grades.* Ninth Research Bulletin of the National Conference on Research in English. Chicago: Scott, Foresman and Co., 1941. Pp. 80.

Discusses the objectives of reading instruction, basic instruction in reading, guidance of reading in various school subjects, activities in literature, the place of the school library in reading activities, appraising the effectiveness of reading instruction, the principal in the improvement of reading instruction.

O'STEEN, ALTON and MILES, ROBERT J. *Ideas that Came True:* An Appraisal of a Series of Social-Studies Broadcasts. Bulletin No. 32. Columbus: Evaluation of School Broadcasts, Ohio State University, 1941. Pp. 11.

One of a series of bulletins presenting an analysis of the school broadcast: "Ideas that Came True."

PAUL, J. B. *A Study of the Grades Assigned During the Academic Year 1940–1941 by the Faculty of the Iowa State Teachers College in Courses Giving College Credit.* Research Report No. 42. Cedar Falls, Iowa: Bureau of Research, Iowa State Teachers College, 1941. Pp. 27.

A detailed statistical analysis of grades assigned at Iowa State Teachers College.

PROCEEDINGS OF THE SEVENTH INSTITUTE ON THE EXCEPTIONAL CHILD. *The Life of an Exceptional Child.* Langhorne, Pa.: Child Research Clinic of the Woods Schools, 1940. Pp. 63.

Proceedings of the Seventh Institute on the Exceptional Child held October, 1940, under the auspices of the Child Research Clinic of the Woods Schools, Langhorne, Pa.

REAVIS, WILLIAM C. *Administrative Adjustments Required by Socio-Economic Change.* Proceedings of the Tenth Annual Conference of Administrative Officers of Public and Private Schools, IV. Chicago: The University of Chicago Press, 1941. Pp. ix + 235.

A summary of papers presented at the tenth annual conference of administrative officers of public and private schools held by the Department of Education, University of Chicago.

REID, SEERLEY. *New Horizons:* A Critical Appraisal of Twenty-Six School Broadcasts Produced by the Columbia Broadcasting System, 1940–1941. Bulletin No. 37. Columbus: Evaluation of School Broadcasts, Ohio State University, 1941. Pp. 48.

One of a series of bulletins presenting analyses of school broadcasts for the school year, 1940–41.

REID, SEERLEY. *Tales from Far and Near: A Critical Appraisal of Twenty-Five School Broadcasts Produced by the Columbia Broadcasting System, 1940–1941.* Bulletin No. 38. Columbus: Evaluation of School Broadcasts, Ohio State University, 1941. Pp. 44.

One of a series of six bulletins dealing with broadcasts of the American School of the Air during the school year, 1940–41.

SEYFERT, WARREN C. and REHMUS, PAUL A. *Work Experience in Education.* Harvard Workshop Series: No. 2. Cambridge: Harvard University, Graduate School of Education, 1941. Pp. ix + 65.

Report of a cooperative undertaking of the national youth administration and the Harvard Graduate School of Education and practicing school administrators in New England States.

TUTTLE ELEMENTARY DEMONSTRATION SCHOOL FACULTY. *Illustrative Teaching Units for the Elementary Grades.* Series on Individualization of Instruction, No. 3. Minneapolis: University of Minnesota Press, 1941. Pp. viii + 99.

One of a series of bulletins prepared by the staff of the School of Education, University of Minnesota as a means of helping teachers, principals, and superintendents adapt instruction to individual differences, discussing: the educational philosophy of the faculty, a kindergarten plant sale, machine technology, how our community is supplied with milk, the post office, how animals are of value to man, what my country should mean to me, life in mountainous Switzerland, world friendship through understanding, the development of printing via the printed page, puppets and puppetry, and our community pantry.

ZAPOLEON, MARGUERITE W. *Steps in a Community Occupational Survey.* Occupational Information and Guidance Service, Misc. 2914. Washington: Federal Security Agency, U. S. Office of Education, 1941. Pp. iii + 18.

A preliminary mimeographed report of a forthcoming bulletin on community surveys.

EDUCATIONAL ADMINISTRATION AND ORGANIZATION

MAHER, THOMAS F. "The Legal Aspects of Private College Administration," *Journal of the American Association of Collegiate Registrars,* XVII (October, 1941), 35–44.

The author reviews certain legal principles governing the administration of private colleges.

PUNKE, HAROLD H. "Demographic Background of High School Youth," *The School Review,* L (January, 1942), 43–52.

The author presents data on the ages of pupils, the percentage of pupils born outside the state of residence, the ages of the living parents, and like data. Differences were found in high school pupils in different states.

SUPERVISION, CURRICULUM AND INSTRUCTIONAL PROCEDURES

BROWNELL, WILLIAM A. "Current Practices with Respect to Phonetic Analysis in the Primary Grades," *The Elementary School Journal,* XLII (November, 1941), 195–206.

From a thirty item check list returned by 627 teachers of grades I, II, and III,

representing 13 states and 26 school systems, the author presents a survey of present practices.

GROSSNICKLE, FOSTER E. "Types of Errors in Division of Decimals," *The Elementary School Journal*, XLII (November, 1941), 184–94.

From analysis of tests administered to pupils in grades VI to IX, inclusive, in four schools, the author concludes that more incorrect examples resulted from the placement of the decimal point in the quotient than from any other cause.

RUDY, MADELINE. "Science Education for Elementary Teachers in Texas Teacher Training Institutions," *Science Education*, XXV (October, 1941), 267–73.

From an analysis of elementary science courses of study and the catalogues of Texas Teacher Training institutions, a survey of current trends is presented.

SAER, HYWELA. "A Further Investigation of Pre-College Teaching Experience and Other Factors in the Teaching Success of University Students," *The British Journal of Educational Psychology*, XI (November, 1941), 183–96.

Pre-college teaching experience seemed not to improve performance in theory courses.

SPACHE, GEORGE. "New Trends in Primary-Grade Readers," *The Elementary School Journal*, XLII (December, 1941), 283–90.

The author notes three trends: (1) that toward extensive use of color and pictures; (2) toward lessening vocabulary burden; and (3) toward an increase in repetition of the basic vocabulary.

THOMPSON, STANLEY L. "Integration of Fifth-Grade Spelling and Handwriting," *The Elementary School Journal*, XLII (January, 1942), 347–57.

An experimental study from which the author concludes that the teaching of spelling and handwriting can be integrated with a saving of time, teaching effort and pupil energy.

WHIPPLE, GERTRUDE. "Elements in Geography Readiness," *The Elementary School Journal*, XLII (December, 1941), 256–67.

From a questionnaire study directed to third and fourth grade teachers and supervisors, the author suggests certain items of readiness that should precede instruction in geography.

WILBURN, D. BANKS. "A Method of Self-Instruction for Learning the Easier Addition and Subtraction Combinations in Grade I," *The Elementary School Journal*, XLII (January, 1942), 371–80.

The author describes a method of self-instruction for learning the easier addition and subtraction combinations in Grade I with data showing that the method is effective.

CHILD WELFARE, GUIDANCE, AND DEVELOPMENT

EAMES, THOMAS HARRISON. "A New Approach to Testing the Eyes of School Children," *American Journal of Ophthalmology*, XXIV (October, 1941), 1170–3.

The author presents data on the validity and reliability of a new test for screening out school children with important eye troubles.

LIPPITT, ROSEMARY. "Popularity Among Preschool Children," *Child Development,* XII (December, 1941), 305–32.

From an intensive study of 45 children attending the Iowa Child Welfare Research Station preschool during 1939 and 1940, the author concluded that if any one factor can be said to be indicative of child popularity, that item is cooperation in routines.

MEASUREMENT, STATISTICS, AND SCIENTIFIC TECHNIQUES

HAMALAINEN, ARTHUR E. "Existing Practices in the Evaluation of Pupil Growth in the Elementary School," *The Elementary School Journal,* XLII (November, 1941), 175–83.

A summary of existing practices in the evaluation of pupil growth in the elementary school considered helpful to the classroom teachers.

RALYA, LYNN L. and RALYA, LILLIAN L. "Some Significant Concepts and Beliefs in Anthropology and Biology of Entering College Freshmen and the Relation of These to General Scholastic Aptitude," *Science Education,* XXV (November, 1941), 314–20.

The authors present an item analysis of pupil responses on a test relating to anthropology and biology.

RAUTMAN, ARTHUR L. "The Measurement of Deterioration in Mental Deficiency," *American Journal of Mental Deficiency,* XLVI (October, 1941), 220–24.

From a study of test data for one hundred adult subjects, the author concludes that the Babcock Tests of Mental Deterioration distinguishes patients showing a progressive decrease in mental test records from those with progressive improvement.

NEW TESTS

BUEHLER, CHARLOTTE and KELLEY, GAYLE. *The World Test.* New York City: The Psychological Corporation, 1941.

"The World Test consists of one hundred and fifty objects with which the child may represent a miniature world. Small trees, houses, animals, cars, and people may be used to build a farm, a zoo, a city, or a town or to play a fictional game." It is suitable for clinical use with children from five to eleven years. Time about twenty minutes.

OTIS, ARTHUR S. *Otis Classification Test: Revised.* Forms R, S, T. A Measure of Mental Ability and Achievement for Grades IV to VIII. Yonkers-on-Hudson, New York: World Book Company, 1941.

A measure, in two parts, of mental ability and achievement for grades IV to VIII. Reliability coefficients for separate grade levels range from .88 to .94. Working time is thirty minutes for each part.

RATHS, LOUIS. *Ohio Teaching Record.* Revised Edition. Columbus, Ohio: Ohio State University Print Shop, 1941. Pp. 32.

A detailed form for studying teachers and teaching.

WILKINSON, RICHARD and PRESSEY, SIDNEY L. *Recreation Inquiry*. New York City: The Psychological Corporation, 1941.

This form has been developed as a means of appraising the social and recreational activities of students in high school or college. Time required for the test is about fifty minutes; norms are available for high school seniors, college freshmen and college seniors.

YOUNG, ROBERT V. and PRATT, WILLIS E. *American School Achievement Tests*. Primary Battery II, Forms A and B. Bloomington, Illinois: Public School Publishing Company, 1941.

A measure of achievement in grades II and III, covering sentence and word meaning, paragraph meaning, computation, problems, language usage, and spelling. Grade and age norms are given.

Research News and Communications

Address all research news and communications to Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

Yearbook for 1942.—The Forty-First Yearbook of the National Society for the Study of Education is to be presented in two parts. Part I, entitled "Philosophies of Education," has been prepared by a committee of which John S. Brubacher, Yale University, is Chairman. The several chapters of this volume constitute a stimulating comparative exposition of the varying concepts characterizing the philosophy of education embodied in the systems of thought known as pragmatism, idealism, realism, Aristotelianism, and Catholicism.

Part II of the Yearbook for 1942, which deals with "The Psychology of Learning," was prepared by a committee with T. R. McConnell, University of Minnesota, as Chairman. This volume explains the fundamental concepts of learning as expressed in terms of conditioning, connectionism, and the field theory of learning, and indicates the relation of these concepts to important aspects of both learning and teaching.

John Dewey Yearbook.—The John Dewey Society was organized five years ago for the purpose of exploring frontier developments in American culture and education. It is in accordance with this purpose that the Fifth Yearbook of the Society, *Workers' Education in the United States,* has been written. Indeed, in more than one sense, and quite apart from whatever else may be said of it, this volume is the most unique of the entire five. It brings together a group of non-academic educators, most of whom are almost entirely unknown within the field of professional education, and yet widely known elsewhere. It also investigates a movement which has grown up quite distinct from the public schools, and again is relatively unknown even to experts in the field of professional education. For these very reasons, this volume constitutes a challenge to the latter: it asks the questions, Why has the labor movement of America found it necessary to set up its own program of education under its own control? Why has the federal government stepped in with financial and official assistance? Why do leaders in workers' education so often look with grave skepticism upon the programs of the public schools as they are now organized? What must primary, secondary, and college education do to meet the needs that, in the judgment of these writers, they are now failing to meet?

The first chapter opens up these questions under the heading, "The Challenge and the Opportunity", written by J. B. S. Hardman, Educational Director of the Amalgamated Clothing Workers of America. The second chapter, "Labor and Public Education," by Spencer Miller, Jr., Director of the Workers' Education Bureau of America, sketches the

extraordinary record of labor's support of the public schools throughout American history—a record all too often unfamiliar to educators themselves. As the third chapter, "The Development of Workers' Education," by Marius Hansome, former professor at the Rochdale Institute, reveals, this record of support has not received the reciprocal support of the public schools themselves and therefore has impelled the working people of America to begin the development of their own educational programs. This development has been enormously accelerated during the last decade, due to new forces in "The Recent Social Climate," the theme of the fourth chapter, by Professor Theresa Wolfson of Brooklyn College.

This perspective provides the setting within which the second part of the volume outlines the activities of workers' education today. Chapters are contributed by Mark Starr, Educational Director of the International Ladies' Garment Workers' Union; Alice Hanson, Instructor in the Hudson Short Labor School; and Eleanor G. Coit, Director of the American Labor Education Service. The theme of Miss Coit's chapter is that workers' education is actually "Progressive Education at Work".

The third and final part of the volume is concerned with problems and prospects of workers' education. Hilda W. Smith, Director of the W. P. A. workers' education program, writes of the teacher and student. Ernest E. Schwarztrauber, Director of the Wisconsin School for Workers, discusses problems connected with administration. This is followed by two chapters on the relation of public education to workers' education by, respectively, President Frank E. Baker of Milwaukee State Teachers College, and Professors George S. Counts and Theodore Brameld of Columbia University and the University of Minnesota. Professor Brameld, who is also editor of the volume, writes the final chapter, entitled "Toward a Philosophy of Workers' Education".

The volume also includes a selected bibliography, biographical sketches of the contributors, and a detailed index.

Kentucky Bureau of School Service.—The Bureau of School Service, University of Kentucky, was established on May 28, 1927, by order of the board of trustees. The function of the bureau is to make available the facilities of the College of Education to educational agencies of Kentucky, for the purpose of aiding them in the solution of their problems. The bureau seeks to fulfill this function through the following types of work: (1) conducting surveys of schools and school systems; (2) giving advisory service in regard to building programs, school organization, curriculums, salary schedules, school budgets, and other administrative and instructional problems; (3) conducting research on important educational topics; (4) editing and publishing research studies and other materials of interest to school administrators and teachers; and (5) co-operating with the State Department of Education, the Kentucky Education Association, and other educational agencies in their programs for the improvement of education. The scope of service includes all phases of education from nursery school through adult education.

The work of the bureau is administered by a director, Maurice F. Seay, who is also a member of the faculty of the College of Education. This work is

carried on by members of the bureau staff, by members of the faculty of the university, by graduate students working on research studies, and by education specialists who are called in from other institutions, as the need arises, to collaborate on important projects.

The bureau publishes four bulletins annually, one of which is an account of the proceedings of the Annual Educational Conference sponsored by the College of Education. The three other bulletins are usually reports on special research studies. The major activities in which the bureau is now engaged are briefly described below:

An Experiment in Applied Economics.—The purpose of this experiment is to determine to what extent the diet practices of a community may be improved through the introduction into the elementary schools of simple instructional materials relating to diet. The bureau prepares and distributes instructional materials concerning food and related topics for use in experimental schools in two Kentucky counties. It also collects and interprets mental, physical, and economic data from the control and experimental communities. The experiment is made possible by a grant from the Alfred P. Sloan Foundation. This project is described more fully in the September, 1941, issue of the bulletin of the Bureau of School Service, entitled *The School Curriculum and Economic Improvement.*

A Project in In-service Education of Rural Teachers.—Another grant-in-aid from the Alfred P. Sloan Foundation enabled the bureau to conduct a five-week work-conference for a group of rural teachers and their superintendent. The teachers in this conference made instructional plans suited to the needs and resources of their particular communities. A typical Kentucky rural county not far from Lexington was chosen for the project; its proximity to the University will facilitate the follow-up program to be conducted by the bureau during the 1941–42 school year. A more detailed description of the project is given in the June, 1941, issue of the bulletin of the Bureau of School Service, entitled *A Work-Conference for Rural Teachers.*

A Study of Housing As a Basic Problem in School Curriculums.—During the spring of 1940 the University of Kentucky was selected as one of three institutions in the south to co-operate during the following summer with the Commission on Resources and Education and with the Association of Colleges and Secondary Schools of the Southern States in a special study of resources and education. The bureau was designated to direct the project at this institution. A class of graduate students, having selected the problem of housing as a project, surveyed the available literature on the subject and outlined plans introducing a study of housing into school curriculums. In 1940–41 these plans were used in schools of four representative Kentucky districts. A report of the project appears in the September, 1941, issue of the bulletin of the Bureau of School Service, entitled *Introducing Housing into School Curriculums.*

The Preparation of Materials for Use by the Kentucky Education Association.—During the campaign for the amendment of the Kentucky Constitution, the bureau has prepared materials for several leaflets published by the Kentucky Education Association. These leaflets present information about the proposed constitutional amendment which would

permit distribution of a small portion of state school funds on some basis other than per capita and which would enable the less favored districts to maintain acceptable programs of education for their children.

Michigan Projects.—The Bureau of Educational Reference and Research, University of Michigan, is devoting a great deal of attention to the development of an instrument to be used as an aid in the guidance of students. This instrument contains 111 items dealing with pupil adjustment in the areas of: home behavior, school life, social life, and vocational attitudes and interests. There were 12,306 copies of this blank ordered by 118 high schools in Michigan in connection with the Michigan High-School Testing Program, which is sponsored by the High-School Principals Association of Michigan. The American Council on Education Psychological Examination and the Interpretation of Social Data Test were administered in this testing program and the results therefrom are being used in an analysis of the results obtained from the instrument under discussion. In order to test the reliability of the instrument, the Bureau is administering, in one or two of the centers in which the instrument was used, another blank in which the items are stated in negative fashion. By checking the responses on this latter blank with the responses to the former blank in which the items are stated in positive fashion, it will be possible to test the reliability of the instrument. Furthermore, the teachers in these particular centers will rate the pupils on a scale involving the particular qualities that the instrument is supposed to measure. The pupils have been asked to write compositions giving their reaction to the blank. In other words, the Bureau is making every effort to determine the value of this paper and pencil inventory as an aid in the guidance of students.

Another project, on which the bureau is continuing its work, has to do with efforts to determine the most satisfactory types of instruments for measuring size and quality of vocabulary. Several forms of vocabulary with different degrees of control in test situations and responses have been administered. The bureau is interested in knowing not only which is the most satisfactory test for measuring vocabulary *per se*, but also which is most satisfactory from the standpoint of ease and economy of time in administering. Some of the test situations being used are: (1) giving a word and asking the pupil to write one or more synonyms for it; (2) giving the definition of a word in a sentence and asking the pupil to write the word portrayed (this is the reverse of giving a word and asking the pupil to define it); (3) italicizing a word in a sentence and to the right of the sentence listing five meanings, and asking the pupil to choose which he thinks is the correct answer; (4) italicizing a word in a sentence and to the right of the sentence in the space for the pupil's response giving the first letter of the correct answer. Effort is also being made to determine the correlation existing between results on various forms of vocabulary tests and the teacher's judgment of size and richness of the pupil's vocabulary.

The director of the bureau is Clifford Woody, who prepared this statement.

Minnesota Publications.—The College of Education of the University of Minnesota has inaugurated two new series of bulletins for educators. One of these consists of practical, non-technical manuals for teachers and supervisors of elementary and secondary schools. The other is a series of special, more technical reports of experimentation and research called *Studies in Education*.

The purpose of the first series is to include helpful hints and clues from research which may be of value to every teacher who wants to keep abreast of current progress and who wishes to make use of recent findings to improve her classroom teaching. The authors have been selected from the University staff. They receive no royalties. The bulletins are published by the University of Minnesota Press and are sold at the cost of manufacture and distribution.

Four titles are now ready in the first series. In the first, *The Children in Our Schools*, the late Josephine C. Foster outlines what the teacher should know about her pupils in those matters on which they differ physically, intellectually, emotionally, and socially. In the second bulletin, Walter W. Cook states the facts regarding the effect of promotion and of grouping policies on pupil achievements and personalities. The third volume is a report on units of instruction which have been used in the Tuttle Elementary Demonstration School of the University of Minnesota, from the kindergarten through grade six. These units show how forward-looking teachers have encouraged self activity, have watched individual readiness for group activity, and have provided a rich variety of materials and projects to meet the needs of fast and slow pupils. In the fourth bulletin of this series, L. J. Brueckner discusses the problem of adapting instruction in arithmetic to individual differences. This bulletin emphasizes practical suggestions on how to organize a program of instruction in arthmetic, so as to provide more effectively for individual differences in arithmetic, and lists excellent projects and selected readings for gifted children in particular.

The first monograph in the series of *Studies in Education* is on *Retroactive Inhibition*, by Esther J. Swenson. The monograph provides not only an excellent survey of recent experiments in this area, but also includes concrete discussion of the implications of such research for education. It draws from the available evidence conclusions concerning the conditions under which subsequent activity may be expected to interfere with the retention of earlier learning.

Plans are being made for additional numbers in these two series, one of the first being on the individualization of instruction in the field of reading.

This information was provided by Dean W. E. Peik, University of Minnesota.

Carnegie Corporation.—In his final report as president of the Carnegie Corporation of New York, Frederick P. Keppel, who retired from the presidency on November 18, 1941, announces that grants totaling $2,706,834 were made by the Corporation during the fiscal year ending September 30, 1941.

Of this sum $500,000 was allocated for matters relating directly to the national emergency. The timing of not a few important cooperative enterprises would have gone wrong had not the Corporation been willing to advance the

necessary funds, in most cases through the National Academy of Sciences, and in some instances to contribute them outright. Besides contributions to the National Academy, which totaled $100,000, emergency grants were made to the Institute of Public Administration for special studies undertaken at the request of government agencies, to Harvard University for the training of supply officers, and to the National Bureau of Economic Research, Council on Foreign Relations, American Council on Education, and to other agencies.

Of the total $2,706,834 given by the Corporation during the year in the United States and the British Dominions and Colonies, $398,511 was allotted for library interests, $566,930 for adult education, $285,452 for the arts, $906,956 for research studies, and $548,985 for general interests.

While war conditions have prevented the initiation of new projects in the British Dominions and Colonies and retarded programs already under way, allocations of grants made during the year from the special fund set aside by Andrew Carnegie for the Dominions and Colonies include: $70,000 for library and educational services in Trinidad and the Windward and Leeward Islands, $30,000 for research activities of the International Labor Organization temporarily housed at McGill University, and $14,800 to the Canadian Research Council in the Social Sciences. Among the projects already completed, Lord Hailey's African Survey, published in 1938, is taking on new significance in the light of present events.

The new president of the Corporation is Walter A. Jessup, who is also president of the Carnegie Foundation for the Advancement of Teaching.

Oriental Library.—Research in the field of oriental culture and affairs is a significant phase of the development of the Oriental Library at Claremount Colleges. This library is devoted primarily to studies of modern eastern Asia. Valuable collections have been brought together, dealing with China, Japan, and Siberia.

Types of Analysis in Research.—A doctorate study was completed in 1941 at the University of Colorado, entitled "History of the Conflict Between Structural and Functional Types of Analysis in Educational Research," by Herbert Andrews Clugston.

Analysis forms an integral part of any complete act of thought. The materials of thought must be broken down into smaller units, and their interrelationships and their relations to the whole must be studied before thinking can proceed. This is the method of analysis. The procedure is different and the results are different when elements are studied separately and when they are studied in relation to a meaningful whole. This difference has provided the setting for a conflict in analytic procedure, and the conflict forms the continuity around which this study of the method of analysis has been developed.

The terms "structural" and "functional" are employed to designate "types" of analytic procedure, defining the frame of reference within which analysis is made. Within the structural frame, analysis tends to view objects of study more or less as independent variables, entities, irrespective of their dependent relationships. Within the functional frame, it tends to view them as

dependent variables, wholes, respecting dependent or functional relationships. These two concepts have contended for supremacy throughout history. In this study, an attempt has been made to trace the development and influence of the conflict in the fields of philosophy, physics, biology, psychology, and education, particularly curriculum development.

The history of philosophic and scientific concept development, a cyclical process fluctuating between explanation and description, provides evidence of the conflict between phenomena regarded as originally constituted wholes and phenomena regarded as particulate, assembling themselves by synthetic processes into integrated wholes. The concept dominant during a given period appears to have determined, to a great degree, the pattern for the method of analysis prevailing in that period. The methods, philosophy, and practices of education, in particular research and curriculum procedures, become more intelligible as they are evaluated in the light of the dominant concept. Educators will profit by attending more carefully to the frame of reference within which their investigations are made.

Journals of State Education Associations.—Florence E. Hagberg of Brooklyn College completed at New York University in 1940 a doctorate study entitled, "Changing Orientations of State Education Associations as Revealed in Their Journals During 1919–1938: With Special Emphasis on the Years, 1929–1938." The journals of the state education associations reach some 750,000 teachers, about eighty per cent of the total number of teachers in the United States. Thus, these publications are in a position to influence the thought of a large number of the teaching profession. Have the journals availed themselves of their strategic position? The present study seeks to answer this question. It is concerned with the changing interests, attitudes, and advocacies manifested in the articles and editorials of the journals from 1919 to 1938, especially the latter of the two decades covered. The journals of twenty state associations were selected, so as to obtain a representative sample with regard to geographic location and varying degrees of ability to pay for education. The chief instrument of research employed was a check-list of 350 items that aimed to embody the important emphases in educational thought and practice. The check-list was applied to the editorials and articles.

The chief findings are:

1. The greatest emphasis in the journals was placed on the instructional program.

2. Scant attention was given to important social problems that concern and affect education.

3. The contribution of the editorials to the thinking involved in the school program was negligible. Their main concern was with financial, administrative, and routine aspects of the school, as well as with the activities of the association.

4. The journals were mildly liberal in their social philosophies.

5. Among the effects of the economic crisis on the thinking of state education associations, as revealed in their journals, was a greater concern with social and educational reconstruction and a stronger emphasis on the need for organized defense of the interests of the school, as well as of the teacher.

Schools of Education.—Timothy F. O'Leary completed at the Catholic University of America in 1941 a doctorate dissertation, entitled "An Inquiry into the General Purposes, Functions, and Organization of Selected University Schools of Education", which he summarizes in the following statement. The schools of education represented are: California at Los Angeles, Chicago, Columbia, Harvard, Iowa, Michigan, and Stanford.

The development of higher learning in the United States since the latter part of the nineteenth century has been phenomenal. Paralleling this growth has been the gradual acceptance of the study of education as a distinct university discipline. Problems involving the general purposes, functions, and organization of university schools of education have also grown out of this expansion. Just what purposes and functions education should fulfill as a university discipline, having both academic and professional values, caused real concern to universities. This has been particularly true in regard to what the university, the graduate school, and the professional school have considered their proper functions in relation to research, the preparation of teachers, school administrators, supervisors, and other leaders of society in the broadly educational sense.

The present study is an inquiry into some of the more significant purposes and functions that have contributed historically to the present organization of selected university schools of education. These have been largely restricted to the training of elementary and secondary school teachers (including laboratory schools), administrators, supervisors, special subject-matter instructors, and to a lesser extent the preparation of college teachers and other educational personnel. Other contributing factors such as training in research methods and techniques, the transmission of the cultural inheritance needed for living in American society, the accrediting of secondary schools, and extension work have likewise been included.

As a means of obtaining perspective, the early beginnings of education as a university subject are treated for each of the universities selected. The impact of powerful social, economic, psychological, and scientific movements conditioning the development of university study of education is also noted.

Junior College Accrediting.—A wall chart, published by the American Association of Junior Colleges in July, 1941, shows in compact form the essentials of accreditation requirements for thirty-eight national, regional, and state agencies. It presents in summary form all of the significant information given in Chapter V of *American Junior Colleges*. The chart was prepared by Walter C. Eells, and is obtainable at fifty cents per copy from 730 Jackson Place, Washington, D. C.

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